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SAFE DRINKING WATER ACT OF 1973

HEARING

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENT

OF THE

COMMITTEE ON COMMERCE

UNITED STATES SENATE

NINETY-THIRD CONGRESS

FIRST SESSION

ON

S. 433

TO ASSURE THAT THE PUBLIC IS PROVIDED WITH AN ADEQUATE QUANTITY OF SAFE DRINKING WATER, AND FOR OTHER PURPOSES

S. 1735

TO ASSURE THAT THE PUBLIC IS PROVIDED WITH SAFE DRINKING WATER, AND FOR OTHER PURPOSES

MAY 31, 1973

Serial No. 93–39

Printed for the use of the Committee on Commerce

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SAFE DRINKING WATER ACT OF 1973

FRIDAY, MAY 31, 1973

U.S. SENATE,
COMMITTEE ON COMMERCE,
SUBCOMMITTEE ON THE ENVIRONMENT,
Washington, D.C.

The subcommittee met at 10:15 in room 1318, New Senate Office Building, Hon. Philip A. Hart (chairman of the subcommittee) presiding.

OPENING STATEMENT BY SENATOR HART

Senator HART. The committee will be in order.

May I apologize for being late. I was not able to escape from the office.

This morning the Subcommittee on the Environment will conduct hearings on legislation to establish Federal regulations for drinking water.

This is the second Congress in which legislation has been pending to tighten our control over one of man's most basic necessities.

As more problems are discovered, I confess to a certain sense of frustration that we don't yet have a statute on the books. The legislation that pends before us I think begs for enactment.

We have found glaring deficiencies in our drinking water resources wherever we have cared to look. This was found in EPA's community water supply study in 1970.

Additional studies by EPA of several more State systems have found the same.

Viruses in drinking water raise the specter of yet another threat. Serious problems such as those experienced in Miami and Homestead, Fla., earlier this year certainly give us scant reason to be complacent with our drinking water supply efforts.

Later this morning the General Accounting Office will report on studies it has made of six additional State water supply programs, as well as a survey of bottled drinking water and drinking water at Federal facilities.

The results should erase any doubts that the need for legislation such as that now under consideration is indeed urgent.

[The bills and agency comments follow:]

Staff member assigned to this hearing: Michael Brownlee.

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93D CONGRESS
1ST SESSION

S. 433

IN THE SENATE OF THE UNITED STATES

JANUARY 18, 1973

Mr. ROBERT C. BYRD for Mr. MAGNUSON (for himself, Mr. HART, and Mr. TUNNEY) introduced the following bill; which was read twice and referred to the Committee on Commerce

A BILL

To assure that the public is provided with an adequate quantity of safe drinking water, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Safe Drinking Water Act of 1973".

DECLARATION OF POLICY

SEC. 2. (a) The Congress finds—

(1) that increasing quantities and types of chemicals, bacteria, viruses, toxic metals, and other contaminants are entering the public water systems that serve as sources which supply the Nation with water for

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drinking many of which are either not detected or removed by established water testing and treatment methods and which are consumed by or come in contact with the public, thereby presenting hazards or potential hazards to the public health;

(2) that the public should be provided with adequate quantities of water that is safe for drinking and other human uses;

(3) that the sale and shipment of contaminants of drinking water or products made through the use or production of such contaminants through interstate commerce present a danger to the public from consuming water containing such contaminants;

(4) that the Federal Government has the responsibility of establishing minimum national drinking water standards for all public water systems and to encourage State and local governments to establish equivalent or more stringent standards; and

(5) that State and local governments are in need of Federal assistance in assuring the quality of water required for drinking and other human uses, and to that end the Federal Government should supply technical assistance, research and development information, monitoring, and testing information, assistance for the planning and implementation of comprehensive State

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drinking water programs, assistance for the development and demonstration of new or improved methods of making water safe for drinking, and assistance for the training of individuals involved in the management and safe operation of our Nation's public water supply systems.

DEFINITIONS

SEC. 3. As used in this Act—

(1) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) The term "Agency" means the Environmental Protection Agency.

(3) The term "State" means a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, and American Samoa.

(4) The term "municipality" means a city, town, borough, county, parish, district, or other public body created by or pursuant to State law and having jurisdiction over the supply of water to the public, and an Indian tribe or an authorized Indian tribal organization.

(5) The term "person" includes a State or political subdivision thereof, municipality, corporation, partnership, association, private or public nonprofit institution, or an individual.

(6) The term "public water system" means—

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(A) any system which provides drinking water, including bottled drinking water, (i) to ten or more premises not owned or controlled by the supplier of water or (ii) to forty or more individuals receiving such drinking water from a system not serving travelers in interstate commerce;

(B) any system which provides drinking water to carriers serving travelers in interstate commerce;

(C) any system which provides drinking water to facilities or establishments serving travelers in interstate commerce, except that the Administrator may by regulation exempt any such system or class of such systems if he determines that such exemption will not result in any unreasonable threat to public health; and

(D) any other system or class of systems which provides drinking water if the Administrator determines by regulation that such system or class of systems may pose an unreasonable threat to public health.

(7) The term "supplier of water" means any person who controls, owns, or operates a public water system.

(8) The term "Council" means the National Drinking Water Council, established under section 7 of this Act.

(9) The term "contaminant" means any physical, chemical, biological, radiological, or other substance or matter which may cause or transmit infectious disease, chemical

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poisoning, chronic disease, or other impairment to man, or which may have any other deleterious effect on the public health.

(10) The term "bottled drinking water" means water for human consumption sold in a closed container.

NATIONAL DRINKING WATER STANDARDS

SEC. 4. (a) The Administrator shall, after consultation with the Secretary of Health, Education, and Welfare, (A) issue initial proposed regulations prescribing national primary drinking water standards within one hundred and eighty days after the date of enactment of this Act and (B) issue initial proposed regulations prescribing national secondary drinking water standards within one hundred and eighty days after the date of such enactment. The Administrator shall specify in such proposed regulations the date on which such regulations shall take effect, which shall be as soon as is practicable.

(b) (1) National primary drinking water standards, as described under subsection (a) of this section, shall be drinking water standards and programs, the attainment and maintenance of which, are requisite to reasonably protect the public health, except that the Administration shall not prescribe the addition of any substance other than for the purpose of treating contaminants. Such standards—

(A) shall prescribe the maximum permissible levels

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for any contaminants which may exist in any public water system in the United States which may cause or transmit disease, chemical poisoning, or other impairments to man, allowing adequate margins of safety;

(B) may apply to any feature of the water supply system including, but not limited to, the treatment, storage, and distribution facilities;

(C) shall include requirements for the adequate operation, maintenance, surveillance, and monitoring of water quality adequate to assure a dependable supply of drinking water which meets the requirements of subparagraph (A); and

(D) shall include requirements for construction and site selection of public water system facilities to protect such facilities from floods and other natural disasters.

(2) National secondary drinking water standards, as described under subsection (a) of this section, shall specify the level of quality of drinking water the attainment and maintenance of which is requisite to reasonably assure aesthetically adequate drinking water. Such standards may apply to any constituent of drinking water (A) which may affect the taste, odor, or appearance of such water, or (B) which may otherwise be necessary to assure aesthetically adequate drinking water.

(3) In establishing or revising standards under this sec-

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tion, the Administrator shall take into consideration the views and recommendations of the Council established pursuant to section 7 of this Act.

(c) The Administrator shall publish simultaneously with the issuance of any proposed national primary or national secondary drinking water standard under this section—

(1) Such criteria and information as, in his judgment, are necessary to accurately reflect the nature and extent of all identifiable effects on public health or welfare which may be expected from the presence of the contaminant which is the object of such proposed drinking water standards.

(2) Information and data on drinking water treatment methods and technology for the control of the contaminant which is the object of such proposed drinking water standard. Such information and data shall apply to each feature of the water supply system at which control of the contaminant may be exercised including, but not limited to, treatment, storage, and distribution facilities and the adequate construction, maintenance, and operation thereof. Such information and data shall include the costs of such treatment and the effectiveness of such treatment in controlling such contaminant.

(d) The Administrator shall, at least every three years,

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review the adequacy of any national primary or secondary drinking water standard under subsection (a) of this section and the criteria, information, and data published under subsection (c) of this section. The Administrator shall publish his findings in the Federal Register.

ENFORCEMENT OF STANDARDS

SEC. 5. (a) For the purposes of this Act, a State will be considered to have primary enforcement responsibility during any period for which the Administrator has approved a plan in accordance with section 11 (d) of this Act and such plan is not being unreasonably deviated from to any significant extent by such State. If any such State has primary enforcement responsibility, the Administrator shall monitor the activities of such State only to the extent necessary to determine if such plan is being unreasonably deviated from to any significant extent. To the maximum extent practicable, any such monitoring shall not duplicate the activities of such State.

(b) (1) Whenever, on the basis of information available to him, the Administrator finds during a period in which a State has primary enforcement responsibility under subsection (a) of this section that any public water system in such State does not comply with any national primary drinking water standard he shall notify the State in which such water system is operating of the noncompliance. If the Adminis-

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trator finds that such failure to comply with such standard extends beyond the thirtieth day after such notification he shall give public notice of such failure to comply with such standard and the extent of the dangers posed and shall, if appropriate remedial action has not been taken to prevent any unreasonable endangerment to public health, (i) commence an action under section 16 of this Act, or request the Attorney General to do so, or (ii) issue an order in accordance with subsection (d) of this section.

(2) Whenever, on the basis of information available to him, the Administrator finds during a period in which a State does not have primary enforcement responsibility under subsection (a) of this section, that a public water system in such State does not comply with any national primary drinking water standard he shall give public notice of such finding and the extent of the dangers posed, and shall, if appropriate remedial action will not be taken to prevent any unreasonable endangerment to public health, (i) commence an action under section 16 of this Act, or request the Attorney General to do so, or (ii) issue an order in accordance with subsection (d) of this section.

(c) Whenever, on the basis of information available to him, the Administrator finds that any public water system in a State does not comply with any national secondary drinking water standards, he shall notify such State and

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request such State to take appropriate remedial action. If, after a reasonable time following such notification, the Administrator finds that such State has not taken remedial action, he shall give public notification of such finding in a manner suitable to inform users of such public water system of such violation.

(d) (1) Any order issued under subsection (b) of this section shall specify such relief as may be appropriate to prevent any unreasonable endangerment to public health. Such relief may include an order requiring the person responsible for the violation which results in the order to cease such violation, to notify customers of such violation in accordance with section 11 (d) (8) of this Act, or to furnish emergency supplies of drinking water.

(2) Any order under this subsection shall be issued only after notice and opportunity for a hearing in accordance with section 554 of title 5, United States Code.

IMMINENT HAZARDS

SEC. 6. (a) An imminent hazard shall be considered to exist when there is reason to believe that a constituent of the drinking water of a public water system will result in a serious risk to health prior to the conclusion of an administrative hearing or other formal proceeding held pursuant to this Act and that a State or local authority or the supplier of water has not acted to eliminate such risk.

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(b) If an imminent hazard exists, the Administrator may petition an appropriate district court of the United States, or he may request the Attorney General to do so, to order such action as is necessary to eliminate the imminent hazard. The Administrator shall simultaneously, if he has not previously done so, propose any regulation which might be necessary under section 4 of this Act, or he may commence an action under section 16 of this Act.

NATIONAL DRINKING WATER COUNCIL

SEC. 7. (a) There shall be established in the Environmental Protection Agency a National Drinking Water Council consisting of fifteen scientifically qualified members. The Administrator shall appoint members of the board from a list of individuals recommended to him by the National Academy of Sciences or from such other sources as he deems advisable. Such Council shall include qualified scientists none of which shall have any economic interest in the supply of drinking water and not more than one-third of which shall have any responsibility for the regulation of drinking water. Each member of such Council shall hold office for a term of three years, except that—

(1) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed, shall be appointed for the remainder of such term;

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(2) the terms of the members first taking office shall expire as follows—(i) five shall expire three years after the date of enactment of this Act, (ii) five shall expire two years after such date, and (iii) five shall expire one year after such date, as designated by the Administrator at the time of appointment; and

(3) the members of such Council shall be eligible for reappointment.

(b) The National Academy of Sciences shall maintain a list of qualified scientists to assist the Administrator in appointing members to such Council.

(c) Such Council shall advise, consult with, and make recommendations to the Administrator on matters relating to the scientific review of data, including engineering data, relating to the activities of the Agency under this Act. Such Council shall, upon the request of the Administrator, review any proposed action of the Administrator and shall report its views and reasons therefor in writing to the Administrator within a reasonable time, as specified by the Administrator. All proceedings and deliberations of such Council and their reports and reasons therefor shall be public record. The report of the Council and any dissenting views shall be considered as part of the record in any proceeding taken with respect to the Administrators' action.

(c) The Administrator is authorized to reimburse the

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National Academy of Sciences for expenses incurred in carrying out this section.

(d) Members of such Council who are not regular full-time employees of the United States shall, while serving on business of the Council, be entitled to compensation at rates fixed by the Administrator, but not exceeding the daily rate applicable at the time of such service to grade GS–18 of the Classified Civil Service, including traveltime; and while so serving away from their homes or regular places of business they may be allowed travel expenses, including per diem in lieu of subsistence as authorized by section 5701 of title 5, United States Code, for persons in the Government service employed intermittently.

RESEARCH, TECHNICAL ASSISTANCE, INFORMATION, TRAINING OF PERSONNEL

SEC. 8. (a) The Adminstrator shall conduct and promote the coordination of research, studies, and investigations and render financial, technical, and other assistance to appropriate public agencies, institutions, water supply utilities, and individuals in the conduct of research, studies, and investigations relating to the causes, diagnosis, treatment, control, and prevention of diseases and impairments of man resulting directly or indirectly from contaminants in drinking water, or to the provision of an adequate quality and quantity of safe

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drinking water. Such research, studies, or investigations may include, but shall not be limited to, the development of—

(1) new and improved methods to identify and measure the existence of contaminants in drinking water and to identify the source of such contaminants;

(2) new and improved methods to identify and measure the health effects of contaminants in drinking water;

(3) new and improved methods of treating water to prepare it for drinking, to improve the efficiency of water treatment and to remove contaminants from the water; and

(4) new and improved methods for providing adequate quantities of safe water for drinking to the public, including improvements in water purification and distribution, and methods of assessing the health related hazards of other characteristics of drinking water supplies.

(b) In carrying out this Act, the Administrator is authorized to—

(1) collect and make available information pertaining to research and investigations, with respect to providing adequate quality and quantity of safe drinking water together with appropriate recommendations in connection therewith;

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(2) make available research facilities of the Agency to appropriate public agencies, institutions, water supply utilities, and individuals engaged in studies and research relating to water supply; and

(3) make grants to, and contracts with, any State or other public agency, educational institution, water supply utility, any other organization, and individuals in accordance with procedures prescribed by the Administrator, under which he may pay all or a part of the costs (as may be determined by the Administrator) of any project or activity which is designed—

(A) to develop, expand, or carry out a program (which may combine training, education, and employment) for training persons for occupations involving the management and safe operation aspects of providing safe drinking water; and

(B) to train instructors and supervisory personnel to train or supervise persons in occupations involving the management and safe operation aspects of providing safe drinking water.

(c) There is hereby authorized to be appropriated to carry out the provisions of this section $14,000,000 for the fiscal year ending June 30, 1974; $23,000,000 for the fiscal year ending June 30, 1975; and $31,000,000 for the fiscal year ending June 30, 1976. Sums appropriated pursuant to

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this section shall remain available for obligation through the close of the following fiscal year.

RURAL WATER SURVEY

SEC. 9. (a) The Administrator shall (after consultation with the Secretary of Agriculture and the several States) enter into arrangements with public or private entities as may be appropriate to conduct a survey of the quantity, quality, and availability or rural drinking water supplies. Such survey shall include, but not be limited to, the consideration of the number of residents in each rural area—

(1) presently being inadequately served by a public or private drinking water supply system, or by an individual home drinking water supply system;

(2) presently having inadequate access to or no access to drinking water; and

(3) who, due to the absence or inadequacy of a drinking water supply system, are exposed to an increased health hazard.

(b) Such survey shall be completed within two years of the date of enactment of this Act and a final report thereon submitted, not later than six months after the completion of such survey, to the President for transmittal to the Congress. Such report shall include recommendations for improving rural water supplies.

(c) There is hereby authorized to be appropriated

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to carry out the provisions of this section $1,000,000 for the fiscal year ending June 30, 1974; $2,000,000 for the fiscal year ending June 30, 1975; and $1,000,000 for the fiscal year ending June 30, 1976.

SPECIAL STUDY AND DEMONSTRATION PROJECT GRANTS

SEC. 10. (a) The Administrator is authorized to make grants to appropriate public and private agencies, institutions, water supply utilities, and individuals for the purposes of—

(1) assisting in the development and demonstration of any project which will demonstrate a new or improved method, approach, or technology for providing a safe supply of drinking water to the public in both urban and rural areas of the Nation; and

(2) assisting in the development and demonstration of any project which will investigate and demonstrate the health implications involved in the reclamation, recycling, and reuse of waste waters for drinking and related uses or which will demonstrate processes and methods for the safe and esthetic preparation of such waters.

(b) Grants made by the Administrator under this section shall not—

(1) exceed 66⅔ per centum of the total cost of construction of any facility and 75 per centum of any other costs, as determined by the Administrator;

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(2) be made for any project involving the construction or modification of any facility in any public water system in a State unless such project has been approved by the State agency charged with the responsibility for safety of drinking water; and

(3) be made for any project unless the Administrator determines, after consulting the Council, that such project will serve a useful purpose relating to the development and demonstration of new or improved techniques, methods, or technologies for the provision of safe water to the public for drinking or other useful purposes.

(c) Nothing in this section shall affect the authority of the Administrator to make grants for Alaska village safe water and pollution elimination or control demonstration projects under section 113 of the Federal Water Pollution Control Act (86 Stat. 832).

(d) For the purposes of this section there is hereby authorized to be appropriated $2,000,000 for the fiscal year ending June 30, 1974; $5,000,000 for the fiscal year ending June 30, 1975; and $10,000,000 for the fiscal year ending June 30, 1976.

STATE DRINKING WATER SUPPLY PROGRAM GRANTS

SEC. 11. (a) There is hereby authorized to be appropriated $8,000,000 for the fiscal year ending June 30, 1974;

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$15,000,000 for the fiscal year ending June 30, 1975; and $21,300,000 for the fiscal year ending June 30, 1976 for grants to the States to assist them in establishing and maintaining adequate programs to assure the safety of public drinking water under this section.

(b) From the sums available pursuant to subsection (a) for any fiscal year the Administrator shall from time to time make payments to the several States, in accordance with regulations, on the basis of (1) the population, (2) the financial needs, and (3) the extent of the actual or potential water supply problem, except that any such payment shall not be greater than an amount equal to two-thirds of the cost of any such State program.

(c) The Administrator shall pay to each State an amount equal to its allotment under subsection (b) for the purposes of defraying the cost of carrying out its State plan approved under subsection (d) of this section, including the cost of training personnel for State and local public water supply work and the cost of administering the State plan. Such payments shall not be made if such plan has not been approved by the Administrator.

(d) The Administrator shall approve any plan for establishing and maintaining a program to assure the safety of public drinking water which is submitted by the State, if such plan—

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(1) provides for the formal adoption by the State of drinking water standards which are no less stringent than the national primary drinking water standards prescribed under section 4 of this Act;

(2) provides for the adoption by the State of appropriate regulations and procedures for the implementation and enforcement of such State standards;

(3) provides for administration or for the supervision of administration of the plan by the State agency charged with the responsibility for the safety of drinking water;

(4) sets forth the plans, policies, and procedures to be followed in carrying out the State plan;

(5) provides for such accounting, budgeting, and other fiscal methods and procedures as are necessary for the proper and efficient administration of the plan;

(6) provides that the appropriate State agency will make annual reports, or such more frequent reports as the Administrator may reasonably require, in such form and containing such information as he may require;

(7) provides for the establishment of an emergency plan of action for each public water system within the State for use in case of an emergency affecting the safety of the treated drinking water or the effective

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operation of the treatment facility, including provision for emergency reserves or alternate sources of water suitable for drinking and culinary purposes; and

(8) provides for the implementation of a standards violation notification procedure, whereby any supplier of water found to be in violation of any Federal or State drinking water standard will be required to so notify its customers, in transmitting water bills or through other appropriate means, of the nature and extent and possible health effects of such violation and the remedial measures which will be taken to correct the problem.

(e) If a State plan has been approved, and the Administrator subsequently finds that such plan is being unreasonably deviated from to any significant extent, the Administrator is authorized to terminate any further payments under this section to such State.

(f) Any approval or disapproval of a State plan under subsection (d) of this section, or termination of payments under subsection (e) of this section, shall be in accordance with and subject to the procedures and judicial review provisions of section 12 of this Act.

(g) For the purposes of determining whether any State plan approved under subsection (d) of this section is being unreasonably deviated from to any significant extent, the Administrator shall cause to be made, at least once every

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three years, a complete audit of such State's water supply programs.

REGULATIONS, PROCEDURE, AND JUDICIAL REVIEW

SEC. 12. (a) At his own initiative, or upon the petition of any person, the Administrator is authorized to issue regulations to carry out the purposes of this Act and to amend or rescind such regulations at any time.

(b) The Administrator shall publish any regulations proposed under this Act, or proposals to amend or rescind such regulations, and his justification therefor in the Federal Register at least sixty days prior to the time when such regulations shall become final. The Administrator shall also publish in the Federal Register a notice of all petitions received under subsection (a) and, if such petition is denied, his reasons therefor. Such notice shall identify the purpose of the petition and include a statement of the availability of any data submitted in support of such petition. If any person adversely affected by a proposed regulation files objections and requests a public hearing within forty-five days of the date of publication of the proposed regulation, the Administrator shall grant such request. If such public hearing is held, final regulations shall not be promulgated by the Administrator until after the conclusion of such hearing. All public hearings authorized by this subsection shall consist of the oral and written presentation of data, views,

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or arguments in accordance with such conditions or limitations as the Administrator may make applicable thereto.

(c) Proposed and final regulations issued under this Act shall set forth findings of fact on which the regulations are based and the relationship of such findings to the regulations issued.

(d) Any judicial review of final regulations promulgated under this Act shall be in accordance with section 701–706 of title 5, United States Code, except that, with respect to relief pending review, no stay of an Agency action may be granted unless the reviewing court determines that the party seeking such stay (a) is likely to prevail on the merits in the review proceeding and (b) will suffer irreparable harm pending such proceeding.

(e) Except as expressly modified by the provisions of this section, the provisions of chapter 5, of title 5 of the United States Code, shall apply to proceedings conducted by the Administrator under this Act.

(f) If the party seeking judicial review applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court either (1) that the information is material and was not available at the time of the proceeding before the Administrator or (2) that failure to include such evidence in the proceeding was an arbitrary or capricious act of the Administrator, the court may order such

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additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, and to be adduced upon the hearing, in such manner and upon such terms and conditions as to the court may deem proper. The Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken, and he shall file with the court such modified or new findings, and his recommendation, if any, for the modification or setting aside of his original order, with the return of such additional evidence.

RECORDS

SEC. 13. (a) Every supplier of water who is subject to a standard prescribed under section 4 or grantee shall establish and maintain such records, make such reports, and provide such information as the Administrator shall reasonably require to assist him in establishing standards and regulations under this Act and in determining whether such person has acted or is acting in compliance with this Act. Suppliers of water and others subject to State enforcement under section 4(c) of this Act shall submit such reports and make available such records and information to the appropriate State agency for inclusion in State reports required under section 11(d)(6) of this Act.

(b) Any officer or employee duly designated by the Administrator, upon presenting appropriate credentials and a

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written notice of inspection authority to any supplier of water subject to a standard prescribed under section 4 of this Act or any grantee (or person in charge of any of its property), is authorized to enter any establishment or facility or other property of such person in order to determine whether such supplier or grantee has acted or is acting in compliance with this Act, including for this purpose, inspection, at reasonable times, of records, files, papers, processes, controls, and facilities, or in order to test any feature of a public water system, including its raw water source. Each inspection shall be commenced and completed with reasonable promptness and the supplier or grantee notified of the results of such inspection.

(c) For purposes of this section, the term "grantee" means any person who receives financial assistance under this Act.

STATE REGULATIONS

SEC. 14. Nothing in this Act shall affect the authority of any State or local government to establish drinking water standards or to make other requirements for purposes similar to those contained in this Act, except that any such standards or requirements shall not be less stringent than the requirements of this Act or regulations thereunder.

PROHIBITED ACTS

SEC. 15. The following acts and the causing thereof are prohibited:

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(1) The failure to comply with any final regulation issued by the Administrator pursuant to this Act, except that noncompliance with a national secondary drinking water standard under section 4(b) of this Act is not prohibited;

(2) The failure or refusal to establish and maintain records, make reports, and provide information as required under section 13(a) of this Act;

(3) The refusal to allow entry and inspection of establishments, facilities, or other property pursuant to section 13(b) of this Act; or

(4) The failure of any person to comply with any order issued under section 5(d) of this Act.

PENALTIES AND REMEDIES

SEC. 16. (a) Any person willfully violating section 15 of this Act shall on conviction be fined not more than $15,000 for each day of violation or imprisoned for not more than one year, or both.

(b) (1) Any person not willfully violating section 15 of this Act shall be liable to the United States for a civil penalty of a sum which is not more than $10,000 for each day of violation, to be assessed by the Administrator after notice and opportunity for an adjudicative hearing conducted in accordance with section 554 of title 5, United States

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Code, and after he has considered the nature, circumstances, and extent of such violation, the practicability of compliance with the provisions violated, and any good-faith efforts to comply with such provisions.

(2) Upon failure of the offending party to pay the civil penalty, the Administrator may commence an action in an appropriate district court of the United States for such relief as may be appropriate or request the Attorney General to commence such an action.

(c) The Attorney General or the Administrator may bring an action in the appropriate district court of the United States for equitable relief to redress a violation by any person of any provision of section 15 of this Act, and the district courts of the United States shall have jurisdiction to grant such relief as the equities of the case may require.

CITIZEN CIVIL ACTION

SEC. 17. (a) Except as provided in subsection (b) of this section, any person may commence a civil action for injunctive relief on his own behalf, whenever such action constitutes a case or controversy—

(1) against any person (including (i) the United States, and (ii) any other governmental instrumentality or agency to the extent permitted by the eleventh amend-

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ment to the Constitution) who is alleged to be in violation of any national primary drinking water standard promulgated under section 4 of this Act, or

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this Act which is not discretionary with the Administrator. Any action brought against the Administrator under this paragraph shall be brought in the District Court of the District of Columbia.

The district courts shall have jurisdiction over suits brought under this section, without regard to the amount in controversy or the citizenship of the parties.

(b) No civil action may be commenced—

(1) under subsection (a) (1) of this section—

(A) prior to sixty days after the plaintiff has given notice of the violation (i) to the Administrator, (ii) to any alleged violator of such standard and (iii) to the State in which the violation occurs,

(B) if the Administrator, the Attorney General, or the State has commenced and is diligently prosecuting a civil action in a court of the United States to require compliance with such standard, but in any such action any person may intervene as a matter of right.

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(2) under subsection (a) (2) of this section prior to sixty days after the plaintiff has given notice of such action to the Administrator. Notice under this subsection shall be given in such manner as the Administrator shall prescribe by regulation.

(c) In any action under this section, the Administrator or the Attorney General, if not a party, may intervene as a matter of right.

(d) The court, in issuing any final order in any action brought pursuant to subsection (a) of this section, may award costs of litigation (including reasonable attorney and expert witness fees) to any party whenever the court determines such an award is appropriate.

(e) Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any national primary drinking water standard or to seek any other relief.

CONFIDENTIALITY

SEC. 18. (a) Copies of (1) any communications, documents, reports, or other information received or sent by the Administrator or (2) the results of any drinking water quality analyses or other information pertaining to drinking water quality possessed by the Administrator shall be made available to the public upon identifiable request, and at reasonable cost unless such information may not be

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publicly released under the terms of subsection (b) of this section.

(b) (1) The Administrator or any officer or employee of the Agency or the Council established under section 7 of this Act shall not disclose any information which concerns or relates to a trade secret referred to in section 1905 of title 18, United States Code, except that such information may be disclosed by the Administrator—

(A) to other Federal government departments, agencies, and officials for official use, upon request, and with reasonable need for such information;

(B) to committees of Congress having jurisdiction over the subject matter to which the information relates;

(C) in any judicial proceeding under a court order formulated to preserve the confidentiality of such information without impairing the proceeding;

(D) if relevant in any proceeding under this Act, except that such disclosure shall preserve the confidentiality to the extent possible without impairing the proceeding; and

(E) to the public in order to protect their health, after notice and opportunity for comment in writing or for discussion in closed session within fifteen days by the person to which the information appertains (if the

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delay resulting from such notice and opportunity for comment would not be detrimental to the public health). In no event shall the names or other means of identification of injured persons be made public without their express written consent.

(2) Nothing contained in this section shall be deemed to require the release of any information described by subsection (b) of section 552, title 5, United States Code, or which is otherwise protected by law from disclosure to the public.

(c) Any communication from a person to the Administrator or any other employee of the Environmental Protection Agency concerning a matter presently under consideration in a rulemaking or adjudicative proceeding in the Environmental Protection Agency shall be made a part of the public file of that proceeding unless it is communication entitled to protection under subsection (b) of this section.

FEDERAL FACILITIES

SEC. 19. (a) Except as provided for in subsection (b) of this section, each Federal department or agency having jurisdiction over any building, installation, or other property, which is or will be served by a federally owned or maintained public water system, shall comply with all national

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primary drinking water standards prescribed under section 4 of this Act and shall, to the maximum extent practicable, comply with any national secondary drinking water standard prescribed under such section.

(b) The Administrator may waive compliance with the requirements of subsection (a) of this section, in whole or in part, upon receiving information from the Secretary of Defense or from the Secretary of the Department in which the United States Coast Guard is operating that such waiver is in the interest of national security. Upon the issuance of such a waiver, the Administrator shall publish in the Federal Register a notice that the waiver was granted for good cause shown by the Secretary of Defense or by the Secretary of the Department in which the United States Coast Guard is operating, in the interest of national security, unless the Administrator has been requested by the applicable Secretary to omit such publication because it would be contrary to the interests of national security.

RELATIONSHIP TO OTHER LAWS

SEC. 20. The authority of the Secretary of Health, Education, and Welfare to regulate bottled drinking water under the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321, et seq.) shall be repealed on the effective date of initial national primary drinking water standards pertaining to bottled drinking water under section 4 of this Act.

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AUTHORIZATION FOR APPROPRIATIONS

SEC. 21. In addition to the authorizations contained in sections 8, 9, 10, and 11, there are hereby authorized to be appropriated such sums as may be necessary, but not to exceed $8,000,000, $11,000,000, and $13,000,000 for the fiscal years ending on June 30, 1974, June 30, 1975, and June 30, 1976, respectively, for the purposes and administration of the Act.

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93D CONGRESS
1ST SESSION

S. 1735

IN THE SENATE OF THE UNITED STATES

MAY 8, 1973

Mr. MAGNUSON (for himself and Mr. COTTON) (by request) introduced the following bill; which was read twice and referred to the Committee on Commerce

A BILL

To assure that the public is provided with safe drinking water, and for other puposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Safe Drinking Water Act of 1973".

DECLARATION OF POLICY

SEC. 2. (a) The Congress finds—

(1) that potentially hazardous drinking water directly or indirectly affecting interstate commerce is reaching many consumers due to inadequate treatment and distribution facilities, inadequate monitoring and surveil-

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lance, and a lack of sufficient information and technology to adequately treat raw water to assure its potability;

(2) that the public should be provided with water that is safe for drinking and other human uses;

(3) that the public should receive prompt and accurate notification if its water is not safe for drinking and other human uses;

(4) that the primary responsibility and enforcement authority for insuring the quality of public water supplies has rested and should continue to rest with State and local governments;

(5) that the Federal Government has the responsibility for establishing minimum national primary drinking water standards and for recommending national secondary drinking water standards for all public water systems, and for supplying where appropriate technical assistance, research and development information, monitoring, and testing information.

DEFINITIONS

SEC. 3. As used in this Act—

(1) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) The term "Agency" means the Environmental Protection Agency.

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(3) The term "State" means a State, the District of Columbia, the Commonwealth of Puerto Rico.

(4) The term "municipality" means a city, town, borough, county, parish, district, or other public body created by or pursuant to State law and having jurisdiction over the supply of water to the public, and an Indian tribe or an authorized Indian tribal organization.

(5) The term "person" includes a State or political subdivision thereof, municipality, corporation, partnership, association, private or public nonprofit institutions, or an individual.

(6) The term "public water system" means—

(A) any system which provides drinking water (i) to ten or more premises not owned or controlled by the supplier of water or (ii) to forty or more individuals receiving such drinking water from a system;

(B) any system which provides drinking water to carriers, or facilities or establishments serving travelers in interstate commerce.

The term "public water system" does not include relocatable systems set up during disasters or emergencies or used in military field operations.

(7) The term "supplier of water" means any person who controls, owns, or operates a public water system.

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(8) The term "contaminant" means any physical, chemical, biological, radiological, or other substance or matter which causes or transmits infectious disease, chemical poisoning, chronic disease, or other impairment to man.

(9) The term "allowable limit—health" means that water, delivered to any user of the public water system, containing substances above these limits presents a substantial risk to the health of humans and shall not normally be used for drinking or culinary purposes.

(10) The term "recommended limit—esthetic" means that water delivered to any user of the public water supply system, containing substances above these limits may be objectionable to an appreciable number of persons but is not hazardous to health.

NATIONAL DRINKING WATER STANDARDS

SEC. 4. (a) The Administrator, after consultation with the Secretary of Health, Education, and Welfare, (A) shall promulgate national primary drinking water standards as soon as practicable after the date of enactment of this Act and (B) may issue recommended national secondary drinking water standards for adoption and enforcement by State and local governments at their option. The Administrator shall specify in such regulations for national primary drinking water standards the date on which such regulations shall take effect, which shall be as soon as is practicable. The Ad-

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ministrator shall, from time to time, revise such standards as appropriate.

(b) (1) National primary drinking water standards shall be standards, the attainment and maintenance of which are requisite to reasonably protect the public health, except that the Administrator shall not prescribe the addition of any substance other than for the purpose of treating contaminants. Such standards—

(A) shall prescribe the allowable limits—health for any contaminants which may exist in any public water system in the United States which may cause or transmit disease, chemical poisoning, or other impairments to man, allowing adequate margins of safety, and

(B) shall include standards for the adequate monitoring and reporting of water quality.

(2) Recommended national secondary drinking water standards, as described under subsection (a) of this section, shall specify the level of quality of drinking water the attainment and maintenance of which is requisite to reasonably assure esthetically adequate drinking water. Such recommended standards may apply to any constituent of drinking water (A) which may affect the taste, odor, or appearance of such water, or (B) which may otherwise be necessary to assure esthetically adequate drinking water. These standards shall be designated as recommended limits—esthetic.

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(3) In establishing or revising standards or publishing recommended standards under this section, the Administrator shall take into consideration (A) the views and recommendations of recognized experts in the field of water supply engineering and public health and (B) the economic and social costs and benefits of such standards and their alternatives.

(c) The Administrator shall publish simultaneously with the issuance of any proposed national primary or recommended national secondary drinking water standard under this section—

(1) Such criteria and information as, in his judgment, are necessary to accurately reflect the nature and extent of identifiable effects on public health or welfare which may be expected from the presence of the contaminant which is the object of such proposed drinking water standards.

(2) Information and data on drinking water treatment methods and technology for the control of the contaminant which is the subject of such proposed drinking water standard. Such information and data shall apply to features of the water supply system at which control of the contaminant may be exercised including, but not limited to, treatment, storage, and distribution facilities and the adequate construction, maintenance, and operation thereof. Such information and data shall include where available the costs and the

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effectiveness of such treatment and the time period necessary to control such contaminant.

(d) The Administrator shall, at least every three years, review the adequacy of any national primary or recommended national secondary drinking water standard under subsection (a) of this section and the criteria, information, and data published under subsection (c) of this section. The Administrator shall publish his findings in the Federal Register.

ENFORCEMENT OF STANDARDS

SEC. 5. (a) For the purposes of this Act, the States have primary enforcement responsibility except for Federal facilities which will comply with section 15 (a). The Administrator shall monitor the activities of the States and public water systems only to the extent necessary to determine if States are establishing and maintaining an adequate program to enforce the national primary drinking water standards.

(b) Whenever the water delivered by a water supply system is not in compliance with national primary drinking water standards, the supplier of such water shall notify its users, appropriate State agencies, and through the State, the Administrator, in accordance with regulations promulgated by the Administrator, of the noncompliance and the extent and nature and possible health effects of such noncompliance.

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Notification received pursuant to this subsection or information obtained by the exploitation of such notification shall not be used against any such person in any criminal case, except a prosecution for perjury or for giving a false statement.

(c) Whenever, on the basis of information available to him, the Administrator finds that any public water system does not comply with any national primary drinking water standard and that necessary remedial action is not being taken, he shall so notify the State in which such water system is operating.

IMMINENT HAZARDS

SEC. 6. (a) An imminent hazard shall be considered to exist when there is reason to believe that a violation of the national primary drinking water standards by a public water system or any other condition will result in a serious risk to public health.

(b) If he determines that an imminent hazard exists, the Administrator may request the Attorney General to petition an appropriate district court of the United States to order such action as is necessary to eliminate the imminent hazard. The Administrator shall simultaneously, if he has not previously done so, propose any regulation which might be necessary under section 4 of this Act, or he may commence an action under section 13 of this Act.

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RESEARCH, TECHNICAL ASSISTANCE, INFORMATION

SEC. 7. (a) The Administrator shall conduct research, studies, and investigations and render financial, technical, and other assistance to appropriate public agencies, institutions, water supply utilities, and individuals in the conduct of research, studies, and investigations relating to the causes, diagnosis, treatment, control, and prevention of diseases and impairments of man resulting directly or indirectly from contaminants in drinking water. Such research, studies, or investigations may include, but shall not be limited to, the development of—

(1) new and improved methods to identify and measure the existence of contaminants in drinking water and to identify the source of such contaminants;

(2) new and improved methods to identify and measure the health effects of contaminants in drinking water;

(3) new and improved methods of treating water to prepare it for drinking, to improve the efficiency of water treatment and to remove contaminants from the water; and

(4) new and improved methods for providing safe water for drinking to the public, including improvements in water purification and distribution, and methods of

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assessing the health-related hazards to other characteristics of drinking water supplies, and studies of the health implications of the reclamation, reuse, and recycling including both indirect and direct reuse of waste waters as sources of public water supplies.

(b) In carrying out this Act, the Administrator is authorized to—

(1) collect and make available information pertaining to research and investigations, with respect to providing adequate quality and quantity of safe drinking water together with appropriate recommendations in connection therewith; and

(2) make available research facilities of the Agency to appropriate public agencies, institutions, water supply utilities, and individuals engaged in studies and research relating to water supply.

STATE WATER SUPPLY PROGRAM PLANS

SEC. 8. (a) Each State shall file an annual State program plan with EPA defining the methods and resources to be applied in establishing and maintaining adequate programs to enforce the national primary drinking water standard for each type of public water system as defined in section 3 (6) beginning one year from enactment.

(b) Such State plan shall be satisfactory if it—

(1) provides for the adoption by the State of the

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national drinking water standards or standards which are no less stringent than the national primary drinking water standards;

(2) provides for the adoption by the State of appropriate regulations and procedures for the implementation and enforcement of the standards adopted pursuant to paragraph (1) of this subsection;

(3) provides for the enforcement of the standards violation notification procedures under section 5(b) of this Act;

(4) provides for administration or for the supervision of administration of the plan by the State agency charged with the responsibility for the safety of drinking water;

(5) sets forth the plans, policies, and procedures to be followed in carrying out the State plan;

(6) provides for such accounting, budgeting, and other fiscal methods and procedures as are necessary for the proper and efficient administration of the plan;

(7) provides for the establishment of an emergency plan of action for each public water system within the State for use in case of an emergency affecting the safety of the treated drinking water or the effective operation of the treatment facility, including provision for emer-

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gency reserves or alternate sources of water suitable for drinking and culinary purposes.

REGULATIONS, PROCEDURE, AND JUDICIAL REVIEW

SEC. 9. (a) At his own initiative, or upon the petition of any person, the Administrator is authorized to issue regulations to carry out the purposes of this Act and to amend or rescind such regulations at any time.

(b) The Administrator shall publish any regulations proposed under this Act, or proposals to amend or rescind such regulations, and his justification therefor in the Federal Register at least sixty days prior to the time when such regulations shall become final. The Administrator shall also publish in the Federal Register a notice of all petitions received under subsection (a) and, if such petition is denied, his reasons therefor. Such notice shall identify the purpose of the petition and include a statement of the availability of any data submitted in support of such petition. If any person directly and adversely affected by a proposed regulation files objections and requests a public hearing within forty-five days of the date of publication of the proposed regulation, the Administrator shall grant such request. If such public hearing is held, final regulations shall not be promulgated by the Administrator until after the conclusion of such hearing. All public hearings authorized by this subsection shall consist of the oral and written presentation of data, views,

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or arguments in accordance with such conditions or limitations as the Administrator may make applicable thereto.

(c) Proposed and final regulations issued under this Act shall set forth findings of fact on which the regulations are based and the relationship of such findings to the regulations issued.

(d) Any judicial review of final regulations promulgated under this Act shall be in accordance with sections 701–706 of title 5, United States Code, except that, with respect to relief pending review, no stay of an agency action may be granted unless the reviewing court determines that the party seeking such stay (a) is likely to prevail on the merits in the review proceeding and (b) will suffer irreparable harm pending such proceeding.

(e) Except as expressly modified by the provisions of this section, the provisions of section 551 of title 5, United States Code, and the following shall apply to proceedings conducted by the Administrator under this Act.

(f) If the party seeking judicial review applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court either (1) that the information is material and was not available at the time of the proceeding before the Administrator or (2) that failure to include such evidence in the proceeding was an arbitrary or capricious act of the Administrator, the court may order such

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additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, and to be adduced upon the hearing, in such manner and upon such terms and conditions as to the court may deem proper. The Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken, and he shall file with the court such modified or new findings, and his recommendations, if any, for the modification or setting aside of his original order, with the return of such additional evidence.

RECORDS AND INSPECTION

SEC. 10. (a) Suppliers of water and others subject to the requirements of this Act shall submit such reports and make available such records and information to the appropriate State agency as necessary for implementation of a State program required under section 8 of this Act.

(b) Any officer or employee duly designated by the Administrator, upon presenting appropriate credentials and a written notice of inspection authority to any supplier of water subject to a national primary drinking water standard prescribed under section 4 of this Act or any grantee (or person in charge of any of its property), is authorized to enter any establishment or facility or other property of such person in order to determine whether such supplier or grantee has acted or is acting in compliance with this Act, including, for this purpose, inspection, at reasonable time, of records,

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files, papers, processes, controls and facilities, or in order to test any feature of a public water system, including its raw water source. Each inspection shall be commenced and completed with reasonable promptness and the supplier or grantee notified of the results of such inspection.

(c) For purposes of this section, the term "grantee" means any person who receives financial assistance under this Act.

STATE REGULATIONS

SEC. 11. Nothing in this Act shall affect the authority of any State or local government to establish drinking water standards or to make other requirements for purposes similar to those contained in this Act, except that any such standards or requirements shall not be less stringent than the requirements of the national primary drinking water standards under this Act.

PROHIBITED ACTS

SEC. 12. The following acts and the causing thereof are prohibited:

(1) Failure by a supplier of water to comply with the requirements of section 5 (b) of this Act, or dissemination by such supplier of any false or misleading information with respect to remedial actions being undertaken to achieve compliance with national primary drinking water standards.

(2) Failure by a supplier of water to comply with the

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standards for monitoring and reporting pursuant to subparagraph (B) of paragraph 4(b)(1) of this Act; or

(3) The refusal to allow entry and inspection of establishments, facilities, or other property pursuant to section 10(b) of this Act.

PENALTIES AND REMEDIES

SEC. 13. (a) Any person willfully violating section 12 of this Act shall on conviction be fined not more than $15,000 for each violation or imprisoned for not more than one year, or both.

(b)(1) Any person not willfully violating section 12 of this Act shall be liable to the United States for a civil penalty of a sum which is not more than $10,000 for each violation, to be assessed by the Administrator after notice and opportunity for an adjudicative hearing conducted in accordance with section 554 of title 5, United States Code, and after he has considered the nature, circumstances, and extent of such violation, the difficulties of achieving compliance with the provisions violated, and any good-faith efforts to comply with such provisions.

(2) Upon failure of the offending party to pay the civil penalty, the Administrator may request the Attorney General commence an action in an appropriate district court of the United States to secure such payment.

(c) The Attorney General may bring an action in the

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appropriate district court of the United States for equitable relief to redress a violation by any person of any provision of section 12 of this Act, and the district courts of the United States shall have jurisdiction to grant such relief as the equities of the case may require.

CITIZEN CIVIL ACTION

SEC. 14. (a) Except as provided in subsection (b) of this section, any person may commence a civil action for injunctive relief on his own behalf, whenever such action constitutes a case or controversy—

(1) against any person (including (i) the United States, and (ii) any other governmental instrumentality or agency to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any national primary drinking water standard promulgated under section 4 of this Act; or

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this Act which is not discretionary with the Administrator. Any action under paragraph (a) (1) of this subsection shall be brought in the district court for the district in which the alleged violation occurred and any action brought under paragraph (a) (2) of this subsection shall be brought in the District Court of the District of Columbia.

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This district courts shall have jurisdiction over suits brought under this section, without regard to the amount in controversy or the citizenship of the parties.

(b) No civil action may be commenced—

(1) under subsection (a) (1) of this section—

(A) prior to sixty days after the plaintiff has given notice of the violation (i) to the Administrator, (ii) to any alleged violator of such standard, and (iii) to the State in which the violation occurs,

(B) if the Attorney General or the State has commenced and is diligently prosecuting a civil action in a court of the United States to require compliance with such standard.

(2) under subsection (a) (2) of this section prior to sixty days after the plaintiff has given notice of such action to the Administrator. Notice under this subsection shall be given in such manner as the Administrator shall prescribe by regulation.

(c) In any action under this section to which the United States is not a party, the Attorney General at the request of the Administrator may intervene on behalf of the United States as a matter of right.

(d) The court, in issuing any final order in any action brought pursuant to subsection (a) of this section, may award costs of litigation (including reasonable attorney and

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expert witness fees) to any party whenever the court determines such an award is appropriate.

(e) Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any national primary drinking water standard or to seek any other relief.

FEDERAL FACILITIES

SEC. 15. (a) Except as provided for in subsection (b) of this section, each Federal department or agency having jurisdiction over a federally owned or maintained public water system, shall comply with all national primary drinking water standards prescribed under section 4 of this Act and shall, to the maximum extent practicable, comply with any recommended national secondary drinking water standard prescribed under such section. Notification required by section 5 (b) will be submitted to the Administrator in lieu of the appropriate State agency.

(b) The Administrator may waive compliance with the requirements of subsection (a) of this section, in whole or in part, upon receiving information from the Secretary of Defense or from the Secretary of the Department in which the United States Coast Guard is operating that such waiver

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is in the interest of national security. Upon the issuance of such a waiver, the Administrator shall publish in the Federal Register a notice that the waiver was granted for good cause shown by the Secretary of Defense or by the Secretary of the Department in which the United States Coast Guard is operating, in the interest of national security, unless the Administrator has been requested by the applicable Secretary to omit such publication because it would be contrary to the interests of national security.

AUTHORIZATION FOR APPROPRIATIONS

SEC. 16. There is hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act.

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COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D.C., May 17, 1973.

B-175985.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate.

DEAR MR. CHAIRMAN: By letter of March 1, 1973, you requested our comments on S. 433, 93d Congress, a bill which if enacted would be cited as the "Safe Drinking Water Act of 1973."

S. 433 would authorize the Administrator of the Environmental Protection Agency (EPA) to issue standards for drinking water to assure that the public is provided with an adequate and wholesome supply of water for drinking and other human uses.

Sections 8(b)(3) and 10(a) would authorize the Administrator of the Environmental Protection Agency to make grants to public and private agencies, institutions, water suply utilities, and individuals. However, there is no provision in the bill authorizing the Comptroller General, or his representative, to have access for the purpose of audit to the records of the recipients of the Federal grants proposed in the bill. Such authority is provided to the Comptroller General with respect to grants-in-aid to States pursuant to section 202 of the Intergovernmental Cooperation Act of 1968 (82 Stat. 1101). We recommend that similar authority be provided with respect to recipients of Federal funds below the State level as well as other recipients under the proposed legislation. This could be accomplished by adding two new subsections to section 13 of the bill as follows:

"(d) Each recipient of Federal assistance under this Act, pursuant to grants, subgrants, contracts, subcontracts, loans or other arrangements, entered into other than by formal advertising, and which are otherwise authorized by this Act, shall keep such records as the Administrator shall prescribe, including records which fully disclose the amount and disposition by such recipient of the proceeds of such assistance, the total cost of the project or undertaking in connection with which such assistance is given or used, the amount of that portion of the cost of the project or undertaking supplied by other sources, and such other records as will facilitate an effective audit.

"(e) The Administrator and the Comptroller General of the United States, or any of their duly authorized representatives, shall, until the expiration of three years after completion of the project or undertaking referred to in subsection (d) of this section, have access for the purpose of audit and examination to any books, documents, papers and records of such recipient which in the opinion of the Administrator or the Comptroller General may be related or pertinent to the grants, contracts, subcontracts, subgrants, loans, or other arrangements referred to in subsection (d)."

On page 24, line 20, "section 4(c)" should be changed to "section 5." On page 26, line 13, "section 5(d)" should be changed to "section 5(b)."

Sincerely yours,

PAUL G. DEMBLING,
(For the Comptroller General of the United States).

ENVIRONMENTAL PROTECTION AGENCY,
Washington, D.C., June 6, 1973.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to your request for the comments of the Environmental Protection Agency on S. 443, the "Safe Drinking Water Act of 1973."

The bill requires the Administrator of EPA to promulgate national primary and secondary drinking water standards. Primary standards are to be health-based and shall include not only constituent levels for contaminants, but also operation, maintenance, surveillance, and monitoring requirements. Furthermore, standards for construction and site selection to protect facilities from floods and other natural disasters are mandated. The Administrator has an option of

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establishing standards, among other things, for treatment, storage, and distribution facilities. Secondary standards are to be based on aesthetic considerations such as taste, odor, and appearance. Responsibility for enforcing primary standards is largely the responsibility of the States, but procedural mechanisms are available to the Administrator that allow him to act if the States fail to do so. In case of secondary standards, the Administrator shall notify a State when he learns that a supplier is not in compliance. If the State fails to take remedial action within a reasonable time, the Administrator shall publicly notify users of the system of the violation.

In addition to the standard-setting and enforcement capabilities conferred upon him, the Administrator is empowered to conduct research, assist others in their research efforts, provide technical assistance, conduct training programs, and initiate a demonstration grant program. The bill also authorizes State program grants for States whose plans are approved by the Administrator.

The bill also provides for the establishment of a National Drinking Water Advisory Council to advise the Administrator. Additional provisions provide for citizen suits and the regulation of bottled drinking water.

The Environmental Protection Agency is in accord with the objectives of this legislation. However, we believe that the Administration's bill (S. 1735), possesses certain features that make its enactment preferable to that of S. 433.

The most important point in favor of the Administration's bill is its recognition of the importance of State and local efforts in providing the Nation with safe drinking water. In recognition of this fact, S. 1735 provides for a distinct division of labor between Federal, State, and local authorities, with the Federal role circumscribed to those activities for which it is best suited; standard setting and requiring adequate monitoring of the quality of the Nation's drinking water at its point of use.

This division of labor has several implications for the Administration's bill. First, the scope of the primary health-related standards is limited in S. 1735 to constituent limits, and monitoring and reporting requirements. The operation and maintenance requirements found in S. 433 are, we believe, better left to State and local determination. Variances in the character of treatment systems around the country—from the cold northern to the warm southern climates—make a Federal standard for operation and maintenance clearly inappropriate. We feel focusing Federal attention at the point of use serves to take full advantage of Federal standard setting capabilities without displacing State and local responsibility.

A second implication of recognizing the importance of State and local efforts is in enforcement. The broad scope of the primary standards under S. 433 coupled with the backup Federal enforcement mechanism of section 5 holds out the possibility of far-flung and intensive Federal enforcement actions. In contrast, S. 1735 embodies a self-executing enforcement mechanism that precludes the need for an extensive Federal presence in the enforcement area. Under the Administration's bill violation of a primary standard calls into play an automatic notification procedure that in conjunction with citizen suits and State enforcement efforts allows for a low Federal profile.

We also believe that the Federal role with regard to secondary (aesthetic) standards should be even more limited. Since these standards will vary greatly from place to place, we feel they should be completely under State and local control. Furthermore, the fact that they are based on aesthetics would seem to make it a local decision as to whether the costs of their adoption are in line with what the State or locality desires to pay for aesthetic benefits. We therefore believe that S. 1735, by providing only for the issuance of recommended secondary standards for adoption by State and local agencies, lays out the appropriate Federal role.

Our concern for State and local initiative also leads us to argue against the enactment of the State program grant provisions of S. 433. Such grants would have several undesirable side effects. State and local initiative would be weakened since EPA would be funding programs and setting priorities in an area of traditional State and local responsibility. Furthermore, both the Congress and the Administration have been concerned with the proliferation of categorical aid programs and these grants would only exacerbate this problem. It is our belief that the costs of treatment, testing and monitoring should be borne by the users of the water supply. Experience has shown that an adequate safe drinking water program can be funded from State and local sources.

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We also recommend against establishing a statutory National Drinking Water Advisory Council to assist the Administrator on matters arising under this legislation. The Administrator will (and as a matter of fact has sought such advice in the past) need to seek advice from outside experts, but we do not believe it is necessary to establish another statutory advisory committee.

The inclusion of bottled water within S. 433's regulatory scheme is another provision we do not recommend be enacted. The Food and Drug Administration has an ongoing program in this area and adequate legal authority to insure the safety of bottled water. We can see no reason for duplicating FDA's efforts.

Accordingly, we recommend enactment of S. 1735, the Administration's Safe Drinking Water Act of 1973 in lieu of S. 433.

We are advised by the Office of Management and Budget that the submission of this report is in accord with the program of the President.

Sincerely yours,

ROBERT W. FRI,
Acting Administrator.

DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D.C., July 25, 1973.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to your request for a report on S. 433, a bill "To assure that the public is provided with an adequate quantity of safe drinking water, and for other purposes."

The bill, to be cited as the "Safe Drinking Water Act of 1973," would (1) establish national primary and secondary drinking water standards, (2) provide for enforcement, (3) create a National Drinking Water Council, (4) institute a Rural Water Survey, (5) authorize grants for Research, Technical Assistance, Information, Training of Personnel, Special Study and Demonstration Projects, and State Drinking Water Supply Programs, and (6) delineate other essential related provisions.

In lieu of S. 433, this Department recommends enactment of S. 1735, a bill "To assure that the public is provided with safe drinking water, and for other purposes," which was included in the President's 1973 State of the Union Message on Natural Resources and the Environment.

The Office of Management and Budget advises that there is no objection to the presentation of this report and that enactment of S. 1735 would be in accord with the President's program.

Sincerely,

J. PHIL CAMPBELL,
Under Secretary.

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D.C., July 10, 1973.

B-175985.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: By letter of May 25, 1973, you requested our comments on S. 1735, 93d Congress, a bill which if enacted would be cited as the "Safe Drinking Water Act of 1973."

This measure would authorize the Administrator of the Environmental Protection Agency (EPA) to issue standards for drinking water to assure that the public is provided with an adequate and wholesome supply of water for drinking and other human uses.

Section 7(a) would authorize the Administrator to render financial assistance to public agencies, institutions, water supply utilities and individuals. There is no provision in the bill, however, authorizing the Comptroller General, or his representatives, to have access for the purpose of audit to the records of the recipients of the Federal assistance proposed in the bill. Such authority is pro-

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vided to the Comptroller General with respect to grants-in-aid to States pursuant to section 202 of the Intergovernmental Cooperation Act of 1968 (82 Stat. 1101). We recommend that similar authority be provided with respect to recipients under the proposed legislation. This could be accomplished by adding two new subsections to section 10 of the bill as follows:

"(d) Each recipient of Federal assistance under this Act, pursuant to grants, subgrants, contracts, subcontracts, loans, or other arrangements, entered into other than by formal advertising, and which are otherwise authorized by this Act, shall keep such records as the Administrator shall prescribe, including records which fully disclose the amount and disposition by such recipient of the proceeds of such assistance, the total cost of the project or undertaking in connection with which such assistance is given or used, the amount of that portion of the cost of the project or undertaking supplied by other sources, and such other records as will facilitate an effective audit.

"(e) The Administrator and the Comptroller General of the United States, or any of their duly authorized representatives, shall, until the expiration of three years after completion of the project or undertaking referred to in subsection (d) of this section, have access for the purpose of audit and examination to any books, documents, papers, and records of such recipients which in the opinion of the Administrator or the Comptroller General may be related or pertinent to the grants, subgrants, contracts, subcontracts, loans, or other arrangements referred to in subsection (d)."

On page 13, line 10, "agency" should read "Agency."

Sincerely yours,

PAUL G. DEMBLING,
Acting Comptroller General of the United States.

Senator HART. Senator Magnuson has been detained, but will be here shortly.

That any legislative effort has moved this far is due in no small part to the efforts of our distinguished colleague from the House of Representatives, the Hon. Howard W. Robison of the 33d District of New York.

I apologize, Congressman, for being late. You are probably the only fellow in the room that understands why you can't stay on schedule.

Mr. ROBISON. Yes, sir.

It is the 27th District now, Senator. We got redistricted.

Senator HART. Did you lose or gain much?

STATEMENT OF HON. HOWARD W. ROBISON, U.S. REPRESENTATIVE FROM THE TWENTY-SEVENTH DISTRICT OF NEW YORK

Mr. ROBISON. About the same.

Mr. Chairman, I would like to begin my remarks this morning by running through the newspaper—actually several newspapers—somewhat after the manner that John Dos Passos used in his trilogy U.S.A. to set the scene for each chapter. My opening headlines read as follows:

Washington Post, March 21, 1972: "Viruses peril water of 2 Massachusetts cities."

Louisville Courier-Journal and Times, December 17, 1972: "State's drinking water program got 'F' from EPA last May."

Atlanta Constitution, January 3, 1973: "After school epidemic water hepatitis test sought."

San Mateo (Calif.) Times, January 3, 1973: How pure is our water?"

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These statements of concern about the safety of drinking water echoed in every corner of the country during the last year in what can fairly be called a "tide of national concern." You and your colleagues on this committee are largely responsible for this national questioning, Mr. Chairman, but every scientific indicator suggests, we've only just begun. For me, this beginning has been long in arriving since my introduction of the Pure Drinking Water Act in August 1970; if you detect a note of urgency in my comments, as I detected in yours earlier this morning, it is because I am indeed most anxious that we get on with this work, end the questioning, and read now only of the progress in drinking water hygiene.

I have spoken in the House at length about the volumes of scientific and medical testimony which demand that closer attention be paid to the safety of household water. The printed records of House and Senate committee hearings have become textbooks for university water studies programs, so there is little I need add by way of further justification. Rather, if I correctly understand our common purpose today, it is to determine the how of the legislation, and not the why.

The process of determining how we go about providing a measure of confidence in the drinking water which flows through every faucet in the country has taken a few turns since Congress first took up this legislation. My own contribution came late in the 91st Congress when, after discussing the results of the community water survey with some of the faculty of the Cornell University Water Research Center, and principally with Dr. Leonard Dwousky, the head of that survey, who will be your seventh witness today and who I asked to accompany me to the table this morning, so that I might have the privilege of introducing him to you now, I drafted and introduced H.R. 19422, the Pure Drinking Water Act. My bill required that, within 90 days of enactment, the Administrator of the EPA should publish for comment what we are now calling primary and secondary drinking water standards, and that, 6 months from the date of publication, the Administrator would begin enforcement of those standards.

Two months later, my good friend Congressman Paul Rogers introduced H.R. 19874, the National Water Hygiene Act, which set the same standards for publication within 90 days, together with a second set of national water hygiene standards relating to waters which supply drinking water systems and also to recreational waters. These two House bills were subsequently reintroduced to the 92d Congress—both on January 22, 1971—and House committee hearings were conducted from May 24 to 26, 1971. The bill which emerged from those hearings, H.R. 14899, which I was privileged to cosponsor, required that the Administrator of EPA publish proposed primary drinking water regulations within 180 days after enactment, and national secondary regulations within 270 days. The States were given primary enforcement responsibilities, subject to the review of the EPA, and the States were required to adopt an underground waste injection-control program within 2 years of enactment. Then, in June of last year, the present House version of the Safe Drinking Water Act was introduced.

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While this flurry of legislative activity was going on in the House over that 2-year period, you, Mr. Chairman, along with Senator Magnuson quietly introduced S. 1478, as an amendment to the Toxic Substances Act, and a month later on September 15, 1972, Senator Spong introduced the Safe Drinking Water Act of 1972. After hearings before this committee, the bill was unanimously passed by the Senate, requiring the publication of both primary and secondary drinking water standards within 180 days of enactment, with subsequent State implementation. The measure also included authorization for a Rural Water Survey, a most important facet of the bill, about which I will have more to say.

In this fashion, Mr. Chairman, I have tried to set the stage for the discussion which must now take place. Congress began its work on safe drinking water in the face of administration objections and later, through hard work and extended negotiations, managed to strike a more cooperative response. We now meet to discuss a most positive contribution by the administration, a new "Safe Drinking Water Act of 1973." which is before you as S. 1735.

I should say, at this point, that I was most encouraged by the President's designation of safe drinking water legislation as an environmental priority, and that I am grateful for the vigorous effort and long hours which went into the drafting of the administration's bill. I would now hope that the administration's support, and its own legislative contribution, has assured early passage of a bill which will move all drinking water systems to the standards and technology of the 1970's and, thereby, assure the safety of household water.

When reviewing the administration bill, it may be well to keep in mind that the "Safe Drinking Water Act" has been a congressional initiative from the beginning. Members of Congress responded to serious derelictions in the treatment and monitoring of public drinking water supplies, and after hearings in both bodies of Congress, the House and Senate bills proposed primary drinking water standards which control contaminants as well as the operation, maintenance, and monitoring of drinking water systems.

With respect to the enforcement of those standards, I would respectfully suggest that both responsibility and accountability ought to rest with the States, as in S. 433, rather than delegating responsibility to the States and accountability to the drinking water supplier, as does the administration bill. Although the self-policing mechanism in the administration bill has the virtue of simplicity and avoids the "comprehensive Federal enforcement" which seems to be objectionable to the administration, it does present a built-in division of accountability. Should either the State or the supplier become lax—leaving the benefit of the doubt to the other—it is the drinking water consumer who will suffer. To my mind, an active State monitoring program, backed by periodic Federal review, is the best long-term guarantee that drinking water supplies will meet primary standards.

In closing, I would like to make one further observation, Mr. Chairman. This committee has made a most significant contribution to the safe drinking water legislation through the inclusion of the

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Rural Water Survey in its bill. And it is most important that this section remain in the committee bill, and that it be in the legislation which is sent to the President. Late in the last Congress, I proposed such a survey as part of the Rural Drinking Water Assistance Act, which I have again introduced this year as H.R. 5541. This bill followed from my earlier work on drinking water, which suggested on a number of occasions that safe drinking water standards are no help to those who don't have any water at all, or have only the most rudimentary source of supply.

The last census provided some data on the number of individuals who lack "some or all plumbing facilities," but my own research, and that of virtually all of those interested in the problem, has failed to turn up any solid information on the extensiveness of this condition. It has been suggested by the Department of Agriculture that more than 20 million people fall into this category—a shocking figure, to my mind, if anywhere near correct—but there is no good data available on precisely where these people are located, or what effects these conditions have on their health. A Rural Water Survey, as described in your bill, thus could give us a far better picture of the scope and seriousness of this problem and, thereby, provide the impetus and direction for a corrective effort.

Mr. Chaiman, since I am somewhat out of earshot of my colleagues in the House, I am only slightly reluctant to acknowledge the leadership which this committee has taken in bringing forward the Safe Drinking Water Act. You have been rightly commended for moving this bill to passage during the last Congress, and I hope we all will soon have the opportunity to add more praise to your efforts in this Congress. And I thank you very much.

Senator HART. Thank you. I wish you had omitted the last because it will sort of dilute the response which I intended to make and shall make.

The leadership that you have given has raised the sights of all of us. We are all grateful to you. And I think the chronology of legislative action which you put into this record at its beginning is going to be very useful. We do, in the confusion of events, tend to forget steps that have been taken and disappointments we have suffered. Also, the press conference would serve, I hope, as a goad to movement.

Mr. ROBISON. Yes.

Senator HART. I think unless you would like to add something now, doctor, we will await your answer with others later.

Dr. DWORSKY. Yes, I would like to do that except I would make one comment here and that is, of course, that it goes without saying that we have been fully aware of what Congressman Robison's actions have been over the past several years and his keen interest.

I would also say that having had some further experience before—in earlier years with your own interest in water pollution control and environment matters—that you are still going at it as strongly as ever and we are deeply appreciative of that fact.

Senator HART. If only something would happen.

Is Cornell in your district?

Mr. ROBISON. Yes, it is in my district and it is still in the new reconstructed 27th district I am glad to state.

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I am also an alumni of Cornell. And I think this has been one of the better illustrations, perhaps, of how a Member of Congress or a Senator can use, as I have tried to do here, the great resources that we find in our universities, particularly our land-grant colleges as Cornell University is.

The relationships I have had through the years, particularly with Dr. Dworsky, and with many other members of the Cornell faculty, have been remarkably constructive and useful ones to me.

Senator HART. I think most of us don't use or exploit the resources of the universities in our districts and States as we should.

Mr. ROBISON. I am afraid that is true sir.

Senator HART. It is not that we are unaware of the resource, but we just haven't the management skill to harness it.

Mr. ROBISON. Right.

Senator HART. We are now being joined by the distinguished chairman, Senator Magnuson.

The CHAIRMAN. Thank you.

Senator HART. Gentlemen, we do appreciate your coming over.

Mr. ROBISON. Thank you sir and good luck to you.

OPENING STATEMENT BY THE CHAIRMAN

The CHAIRMAN. I have a short statement.

I am pleased the committee has taken up my bill on drinking water—especially since I am somewhat familiar with the GAO's activities in this field over the past 2 years.

Although my own State of Washington was not the only State to come within the scope of this investigation, I do want to comment briefly on the findings in Washington State.

1. Of the 127 systems surveyed, only seven would pass Washington State bacteriological standards.

2. Sixty-five percent of Washington's systems had not had a chemical analysis—mercury, cadmium lead, organic chemicals, et cetera—performed within the past year. Existing standards call for analyses at least once a year.

3. The State does not require that sanitary surveys be made of treatment works. It relies solely on reports given the State by the water supply systems themselves, and then only from the larger systems.

4. Although 400 of Washington's larger water supply water systems have been instructed by the State to establish programs to prevent contamination of water supplies through unforeseen reductions in pressure, only three of the systems had effective programs as of October 1972.

5. Only 4 percent of Washington State's water supply system operators were certified as of July 1972. While the State standards do not address themselves to this issue, responsible thinking indicates that virtually all operators responsible for a water treatment plant should be certified.

Many of the problems cited in the GAO report would be soluble by the program grants section in my bill. Money would be available to the States to finance up to two-thirds of their drinking water program costs. The administration bill has no similar provision.

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Virtually the same conclusions were found in the other States as well. In addition, GAO also looked at bottled drinking water and drinking water supplied at Federal facilities. Both were found lacking.

Senator HART. Thank you Senator Magnuson.

We welcome the Director of Resources and Economic Development Division of the General Accounting Office, Mr. Henry Eschwege. Is that the way you pronounce it?

STATEMENT OF HENRY ESCHWEGE, DIRECTOR OF THE RESOURCES AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE; ACCOMPANIED BY PHILIP CHARAM, DEPUTY DIRECTOR FOR ENERGY AND ENVIRONMENTAL PROGRAMS, RESOURCES AND ECONOMIC DEVELOPMENT DIVISION; AND EDWARD DENSMORE, JR., ASSISTANT DIRECTOR

Mr. ESCHWEGE. Right, sir.

Senator HART. Mr. Eschwege, we will, if there is no objection, order your full statement printed in the record as though given in full. As you go along if you want to add anything or skip anything the record will take care of it.

Mr. ESCHWEGE. In other words you don't want me to read the statement.

Senator HART. It is up to you. But you can be sure that the record will contain the prepared statement in full.

My point was that if as you go along there is any addition you want to make feel free to do it.

Mr. ESCHWEGE. I appreciate that Mr. Chairman.

May I introduce my colleagues here this morning, On my left is Mr. Philip Charam, Deputy Director for Energy and Environmental Programs in the Resources and Economic Development Division.

On my right is Mr. Edward Densmore, Jr., who is the Assistant Director of the Division in charge of our work at the EPA.

Mr. Chairman and members of the subcommittee, we are pleased to appear before you today to discuss the results of our review of Federal and State programs for assuring the purity and safety of drinking water.

A report on the results of our review is being drafted and will be submitted to the Congress in the near future. We hope that our testimony today and our report, when completed, will be useful to this subcommittee and the Congress in their consideration of S. 433, the proposed Safe Drinking Water Act of 1973 and other bills on the same subject.

Our review was conducted in the States of Maryland, Massachusetts, Oregon, Vermont, Washington, and West Virginia; and included community water supplies, the Federal interstate carrier water supply program, drinking water at Federal recreation sites, and bottled water.

Local governments and utilities as you know have the responsibility for constructing, operating, and maintaining water supply systems and taking samples of the water for submission to the States.

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The States have established water quality standards and sampling requirements and have responsibility for monitoring water quality of public water supply systems. Federal authority to regulate drinking water is restricted to the drinking water used on interstate carriers and to bottled drinking water sold interstate.

STATE DRINKING WATER PROGRAMS

State and local governments have the primary responsibility for insuring that drinking water delivered to the public by about 40,000 public water supply systems in the Nation is pure, safe, and wholesome. Over the years, the number of waterborne disease outbreaks has decreased substantially.

Althought the majority of the people in the United States can be assured that the water they drink is safe, recent Environmental Protection Agency (EPA) studies, and our review of the water supply programs in six States, showed that potentially hazardous water is being delivered to some consumers, particularly by small water supply systems serving populations of 5,000 or less.

Our review of the bacteriological test records for 446 water supply systems in the six States showed that 81 systems were delivering water whose bacteria content exceeded the limits of the Federal drinking water standards for two or more months during the year ended March 31, 1972.

Under EPA's program for evaluating and classifying interstate carrier water supply systems, these 81 systems could be classified as prohibited for use by interstate carriers.

An additional 44 systems were delivering water whose bacteria content exceeded the limits of the Federal standards for 1 month during the year and could be classified as provisionally approved for use by interstate carriers.

Many of the 446 systems were being tested by the States and localities less frequently than recommended in the Federal standards and the quality of the water was not fully known. Of the 446 systems, 207 could have been classified by EPA as prohibited for use by interstate carriers and 112 systems could have been classified by EPA as provisionally approved because insufficient samples were taken.

Of the 446 systems, only 60 were in compliance with both Federal bacteriological and sampling requirements and could be classified as approved.

Mr. Chairman, on the basis of our review we believe that the local governments and utilities need to expand, replace, or improve water treatment facilities.

The States need to improve their water quality monitoring programs. The States need to insure that water treatment plant operators are qualified and adequately trained, and the States, local governments, and utilities need to establish more effective programs for eliminating cross connections. These are physical connections between drinking water distribution systems and systems containing substances which could contaminate the drinking water.

The Federal drinking water standards recommend a monitoring program for water supply systems that calls for frequent analyses of

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the water for bacteriological content, periodic analyses of the water for chemical content, and frequent sanitary surveys of the water for chemical content, and frequent sanitary surveys of the water treatment facilities to identify potential health hazards.

The six States in our review had water quality bacteriological standards that were identical to the Federal drinking water standards. With the exception of Oregon and Massachusetts, which required that fewer samples be analyzed, the States' bacteriological sampling requirements also were identical to the Federal standards.

Oregon officials told us that the State required fewer samples primarily because it did not have the laboratory capacity to analyze the number of samples recommended in the Federal standards.

Massachusetts officials told us that, in their opinion, the State's sampling requirements, which were 50 percent less than the Federal standards, were sufficient to provide a representative analysis of the quality of the water.

As previously pointed out, several water systems did not comply with Federal bacteriological quality or sampling requirements. When water systems failed to meet bacteriological standards or sampling requirements, the States wrote letters to, and sometimes visited, the systems to stimulate corrective action. We found generally, however, that the letters and visits were not effective in obtaining corrective action.

State officials in West Virginia, Washington, Oregon, and Massachsetts told us that in some cases the States did not encourage systems to submit the required number of samples because the States lacked sufficient laboratory capacity and adequate numbers of technicians to conduct the bacteriological analyses.

Vermont and Maryland officials told us that they had sufficient personnel and laboratory capacity to analyze the samples. A review of records showed, however, that many systems were not submitting the required number of samples.

The States' chemical monitoring programs were not adequate. The six States had adopted the Federal chemical quality standards and required that water supplies be analyzed for chemical content. They did not, however, have any records of chemical analyses for 79 of the 446 systems whose records we reviewed.

Of the remaining 367 systems only two had chemical concentrations that exceeded the Federal standards for protection of health, but 135 systems had chemical concentrations that exceeded one or more of the federally recommended standards for clarity, odor, and the constituents which affect taste—the so-called aesthetic characteristics of drinking water.

The chemical quality of the water for most of the 367 systems was not fully known because the States generally did make analyses for many toxic and hazardous elements such as arsenic, cadmium, or cyanide. For example, Massachusetts did not make analyses for any of the nine chemicals included in the Federal health standards.

With the exception of Oregon, the States required that chemical analyses of public water supplies be made on an annual basis. Oregon had required chemical analysis only when a water supply was first used. As of March 1972, the most recent chemical analyses for

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the water supplies whose records we reviewed in Oregon were an average of 7 years old.

In practice, only Massachusetts was consistently performing chemical analyses on an annual basis. In Washington, as of August 1972, the most recent chemical analyses were more than 1 year old for 65 percent of the systems whose records we reviewed; in Vermont for 49 percent, in West Virginia for 45 percent, and in Maryland for 27 percent.

State officials told us that annual chemical analyses generally were not made for all chemicals because of the high cost involved, insufficient manpower, and/or the low probability of the presence of certain chemicals in the water.

In addition to bacteriological and chemical sampling, the Federal drinking water standards recommend that frequent sanitary surveys of water supplies be conducted to locate and identify health hazards which might lead to contamination of the supplies.

Five of the States reviewed conducted sanitary surveys. The sixth State, Washington, did not make sanitary surveys but required its larger supply systems to submit annual reports which contained much of the information which would be obtained during sanitary surveys.

Our review of State inspection records showed that the extent to which the States conducted sanitary surveys varied substantially. For example, in fiscal year 1972, West Virginia made surveys of 122 of the State's 615 supply systems. Oregon, as of July 1972, had conducted sanitary surveys during the previous 5 years of only 197 of the State's 510 water supply systems. Maryland officials told us that eight inspectors made about 700 surveys in 1972 and that their goal was to make quarterly surveys of all systems.

With the exception of Maryland, State officials told us that sanitary surveys were not being made as often as necessary, or in sufficient depth to detect unsanitary conditions primarily because of a lack of manpower.

Facilities. Many of the water supply systems whose records we reviewed were constructed many years ago and had deficiencies which could inhibit the systems' ability to deliver water of an acceptable quality. The deficiencies were noted in many systems—both large and small.

For example, West Virginia officials told us that many of the State's water supply facilities were from 30 to 50 years old. Of the 615 systems in the State, 415 needed to be renovated or replaced—including 46 which needed to provide chlorination. Of the 315 systems, 356 served populations of less than 1,000.

The deficiencies included lack of chlorination, inadequate protection of the source of the water supply, inadequate storage capacity, and inadequate distribution system pressure and capacity.

Our review showed that: The cost to correct all the deficiencies in the systems is quite high; although it would be expensive to correct all system deficiencies, correction of those deficiencies causing potential health hazards could be much less costly; small communities generally did not have the funds needed to correct the deficiencies. Some communities were reluctant to provide chlorination to kill bac-

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teria in their drinking water because they objected to the taste and odor of chlorine.
tained by qualified operators to insure that they deliver good quality better paying full-time positions with the larger systems.
water.

All the States reviewed had operator certification and training programs. But they were not as effective as they should be. To obtain certification, the States generally required the operator to meet certain training and experience requirements and to pass an examination. Oregon and Washington had voluntary certification programs. The other four States had mandatory certification programs —two of which had been established within the last 3 years.

We found, however, that many operators had not been certified, even in the States where certification was mandatory. As of May 1973, for example, Massachusetts had not implemented its certification program, although the program went into effect in July 1972. Generally, those operators who had completed the certification requirements were operating and maintaining the large water treatment systems.

For example, although only 4 percent of the systems in Washington had certified operators, those systems provided drinking water to 77 percent of the State's population served by public water supply systems.

State officials told us that many operators of small systems were not certified and were employed on a part-time basis because the systems did not need, or have sufficient funds for full-time operators. They said that these operators were frequently not interested in obtaining the training required for operator certification, and those who obtained the needed training and certification, generally sought better paying full-time positions with the larger systems.

The six States had training programs to qualify operators for certification and to keep water supply personnel abreast of the latest developments in operating and maintaining supply systems. Many operators were not participating in these programs, however. State officials told us that operators had not participated in the training programs because of the lack of travel funds for an operator to attend training courses; or lack of another person capable of operating the system in the operator's absence; inability of a part-time operator to attend because he had another job; and lack of interest by the city administrator or the operator himself.

One of the most frequent sources of contamination of drinking water in the distribution system has been a physical connection, called a cross connection, between the distribution system and a system containing substances which could contaminate the drinking water. Whenever such a physical connection exists, the unwanted substances can enter the water distribution system due to either a reduction in pressure within the water system or higher pressure in the second system.

The most publicized recent waterborne disease outbreak which occurred as a result of a cross connection happened at Holy Cross College in Worcester, Mass., in 1969. Ninety individuals contracted infectious hepatitis after drinking water from a faucet located in an athletic equipment building. The waterline to the faucet ran through

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a series of sunken sprinkler boxes used for irrigation. Investigators found that the use of water to fight a nearby fire caused a reduction in pressure in the water main and in siphonage of contaminated water from the sprinkler boxes to the drinking faucet.

Other cross connections have resulted in the infiltration of toxic chromate chemicals, gasoline, hot water, and steam into drinking water systems.

Our review showed that Vermont did not have a cross connection control program. The cross connection control programs in Massachusetts had been limited because of insufficient personnel and in West Virginia because of the lack of legislative authority.

Maryland recently established a program to eliminate health hazards associated with existing cross connections. It previously had a program to prevent cross connections in new construction.

In Washington and Oregon, the individual water supply systems had primary responsibility for cross connection control. In Oregon only 8 of the 510 larger water supply systems had active cross connection control programs. Washington officials told us that, as of October 1972, only two or three of the 400 larger systems in Washington had effective cross connection control programs.

Although several Federal programs impact on drinking water, there are no Federal laws which specifically regulate the quality of municipal water supplies.

The Federal Government has authority to regulate drinking water used on interstate carriers such as planes, trains, buses, and vessels. The interstate carrier water supply program was established under broad legislative authority contained in the Public Health Service act, the Public Health Service established drinking water standards, the spread of communicable diseases between the States. Under the Act, the Public Health Service established drinking water standards, last revised in 1962, for use in evaluating the adequacy of interstate carrier water supplies.

Since 1970, EPA has been responsible for revising the drinking water standards and for evaluating the adequacy of the water supplies used by interstate carriers; and the FDA has been responsible for enforcing EPA's decisions to prohibit interstate carriers from using contaminated water supplies.

EPA annually classifies water supply systems serving interstate carriers as approved, provisionally approved, or prohibited on the basis of information and recommendations provided by the States and supplemented by Federal or joint Federal-State surveys of the systems.

The six States in our review had a total of 67 interstate carrier water supply systems. Our review of the records for the 67 systems showed that 17 had not used certified laboratories for bacteriological analyses of water samples as required by EPA regulations; 44 had not been inspected by the States during 1972 although EPA recommends annual inspections to evaluate a system's reliability; 38 did not have certified operators; and 40 did not have cross connection control programs.

In addition, we noted that EPA did not always take prompt action to reclassify water supplies from approved to provisionally approved when deficiencies were noted during inspections.

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I would like now to discuss certain limitations on Federal authority to regulate the quality of water supplies. If EPA determines that water supplies used by interstate carriers are not bacteriologically safe, Federal enforcement action is limited to prohibiting interstate carriers from using the systems as a source of potable water. Present legislation does not authorize the Federal Government; (1) to take action to correct the bacteriological problems, or (2) to restrict the use of the water by the communities served by the systems.

There is also some question as to whether EPA can enforce chemical standards because chemicals do not cause communicable diseases.

Although the records did not indicate that chemical standards had been exceeded at the 67 systems, we noted, that as of December 1972, only 7 of the 67 systems had been analyzed for chemical content during 1972.

I would like to mention one additional matter related to drinking water available to interstate travelers. The Federal Government has relied primarily on the States to assure that drinking water supplied to travelers at interstate highway rest areas is of good quality.

Our review of the adequacy of State water quality monitoring programs for 25 interstate highway rest areas in Oregon and 21 interstate highway rest areas in Washington showed that the States' drinking water monitoring programs did not provide such assurance. We found that, in general, Oregon's bacteriological sampling of rest area water supplies was adequate, but Washington's was inadequate. Washington had not made analyses of the water supplied at some rest areas since they were first opened in 1971 and 1972, and had made analyses only annually, or less frequently, of the water supplied at other areas. Neither State took periodic chemical samples or made sanitary surveys of rest area water supplies.

We evaluated the adequacy of Federal water quality monitoring programs at 71 water supply systems serving 35 Corps of Engineers, National Park Service and Forest Service recreation sites in Oregon and Washington. We found that the monitoring programs differed widely among these agencies and that the agencies did not have reasonable assurance that the quality of water supplied to the public was of acceptable quality.

The Corps of Engineers and the National Park Service did not have guidelines prescribing the frequency for bacteriological and chemical sampling or sanitary surveys. The Forest Service required that water samples be analyzed at a frequency that varied between twice a month and once a season depending on the size of the site and the history of previous test results.

The Federal drinking water standards recommend that a minimum of two samples a month from each water supply be analyzed for bacteriological content. We found that most water supplies were not sampled twice a month, and many were sampled infrequently.

For example, as of August 1972, 6 of 17 Corps water supply systems had been sampled about once a year, and 2 had not been sampled during the period January 1971 to August 1972. Of the 28 Forest Service systems reviewed, 9 had not been sampled between January 1972 and August 1972.

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We found also that chemical analyses of the water systems were made infrequently and did not include tests for such toxic and hazardous elements as arsenic, cadmium, and cyanide.

Sanitary surveys were being made periodically at the National Park Service sites but not at the Corps or Forest Service sites.

In letters to the Corps, Forest Service, and the National Park Service, sent between October and December 1972, we recommended that these three agencies insure that periodic bacteriological and chemical samples are taken of their water supply systems at recreation sites. We recommended also that the Corps and Forest Service insure that periodic sanitary surveys are made of their water supply systems.

All three agencies generally agreed with our recommendations and have taken or propose to take action to improve their monitoring programs.

Our review did not include all Federal agencies having public recreation sites. Similar conditions may also exist at the recreation sites of other Federal agencies.

Our review also covered Federal-State regulation of bottled drinking water. Increased interest in the environment and fears of municipal water supply pollution in recent years has resulted in a significant increase in bottled water sales to the public. However, neither the Federal nor the State agencies included in our review had effective programs for assuring that bottled water was pure, safe, and free of potential adverse health effects.

The Federal Food, Drug and Cosmetic Act authorized FDA to regulate imported and domestic bottled water sold interstate. As of May 1973, however, FDA had not established standards for bottled water, or a program specifically for monitoring the quality of bottled water. Federal activity had been limited to two studies of the quality of bottled water and sanitation of bottling facilities made by EPA and FDA during 1971 and 1972.

Both studies showed that some bottled water contained a large number of microorganisms—in one case 28 million microorganisms per milliliter—indicating that the water was bottled under unsanitary conditions.

Although there are no official standards for the number of microorganisms that may be present in drinking water, acceptable potable water usually contains less than 1,000 microorganisms per milliliter and frequently contains only 2 or 3 microorganisms.

Maryland, Massachusetts, Oregon, Washington, and West Virginia had programs for the regulation of bottlers and bottled water which included licensing of bottlers, inspections of bottling facilities, and water quality sampling. We did not review Vermont's bottled water program. Our review of the States' programs showed that:

Washington and Oregon did not regulate bottled water imported from other countries or other States. The other three States did regulate such water.

Washington's licensing program was voluntary and only one of five bottlers in the State was licensed. The other states had mandatory licensing programs.

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The States rarely revoked licenses of bottlers who continually failed to comply with State regulations.

The States did not test bottled water for all the chemical constituents included in the drinking water standards.

To determine the quality of bottled water available to the public, we purchased off-the-shelf bottle water and had it analyzed by EPA or State laboratories. In the absence of Federal standards for bottled water, we compared the test results to the drinking water standards. Some of the samples had high bacteria counts—in one case 1.9 million microorganisms per milliliter.

The tests showed that some brands of imported foreign bottled mineral water had chemical concentrations in excess of the drinking water standards' mandatory chemical limits—these are limits for protection of health and these limits were for arsenic, and fluoride—and the recommended chemical standards for total dissolved solids, manganese, sulfates, and chloride.

On August 7, 1972, we provided FDA with the test data we had obtained on one brand of bottled mineral water which had chemical concentrations in excess of the mandatory standards for arsenic and fluoride.

In a letter to us dated September 19, 1972, FDA stated that its analysis of bottled water and bottled mineral water had not disclosed harmful amounts of minerals. FDA's analyses of several samples of one brand of a foreign imported mineral water, however, showed that the arsenic and fluoride contents were substantially higher than those recommended in the drinking water standards.

On January 8, 1973, FDA published in the Federal Register proposed bottled water quality standards which are consistent with the drinking water standards. With the exception of mineral water, the standards would apply to water that is sealed in bottles or other containers and intended for human consumption.

The proposed regulations require that, if the bottled water does not meet the prescribed standards, the label must so state. Water that contains harmful amounts of chemicals and bacteria can be removed from the market.

However, water which is bottled and sold as mineral water is exempted from the labeling requirement even though it may contain bacteria or chemicals in excess of the amount allowed under Federal quality standards. As of May 1973, the regulations had not been finalized.

S. 433 would require that bottle drinking water comply with national primary drinking water standards established by EPA. S. 433 would define "bottled drinking water" as water for human consumption sold in a closed container, and would, therefore, include mineral water.

We believe that standards should be set for bottled water, and that such standards should be enforced if the public is to have reasonable assurance that bottled water is of acceptable quality.

In conclusion, Mr. Chairman, we believe that legislation before this subcommittee is designed to provide reasonable solutions to the problems we identified. The legislation would require EPA to establish national primary drinking water standards, designed to reasona-

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bly protect the public health; and national secondary standards, designed to reasonably assure aesthetically adequate drinking water.

The legislation provides also that States have primary responsibility for enforcing the standards, but it authorizes EPA to enforce the primary standards if the States fail to take corrective action after receiving notice from EPA that a public drinking water system does not comply with a primary standard.

And finally, the legislation provides for more effective regulation of (1) water available to all interstate travelers, (2) water at Federal recreation sites, and (3) bottled water.

Mr. Chairman, this concludes my prepared statement. We shall be happy to respond to any questions you may have.

Senator HART. Thank you, Mr. Eschwege. Senator Magnuson?

The CHAIRMAN. Mr. Eschwege, I think both Senator Hart and I want to compliment the Agency on doing this fine job.

Mr. ESCHWEGE. Thank you.

The CHAIRMAN. A little history might go in the record here. At one time about 3 or 4 years ago we found that the Department of Health, Education, and Welfare, which at that time was supposed to set the standards for drinking water and enforce the regulations, was woefully understaffed and generally inadequate.

The budget of this administration and every administration has neglected them woefully; and in handling the HEW appropriation, we ran into this fact. That is why we suggested that you people take a look at it.

And you have done so. And I must say, some of the things that you told us here today and will be in your final report are somewhat startling.

I think there has been a complete unawareness by a lot of people that drinking water is an important facet of the health of all Americans.

Now, when will your final report be ready? I mean a rough idea.

Mr. ESCHWEGE. Within 2 months. We still have to send it to the agency officials and give them an opportunity to comment and get them to react to it. But we will try to expedite it and have it in about 2 months.

The CHAIRMAN. But in the meantime, and as of now, even though there is some responsibility through Federal regulation of drinking water as it applies to interstate carriers, there is no staff to do it at all. There is no money; it just isn't there, is that correct? I get the implication from your report that, even though we might have this authority now in EPA; they have transferred over to EPA, have they not?

Mr. ESCHWEGE. Yes, they have.

The CHAIRMAN. There are not adequate funds to go ahead and do what they could do now under the law in sampling the water, is that correct?

Mr. DENSMORE. Sir, at the present time——

The CHAIRMAN. Under the present law. Under present authority.

Mr. DENSMORE. Yes.

The CHAIRMAN. They have the general authority to take a look at drinking water on interstate carriers. But they haven't been able to do it. Is that correct?

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Mr. DENSMORE. Well, they have done a pretty good job on monitoring the quality of the water that is used on interstate carriers within the limits of their resources. But it is restricted to the water supplies used by interstate carriers. At the present time they have a staff of about 181.

The CHAIRMAN. Now?

Mr. DENSMORE. Now.

The CHAIRMAN. After they put a little more in their budget 2 years ago and a year ago. But I do get the inference from your report here, your preliminary report, that it is still not adequate to do the job in interstate commerce.

Mr. DENSMORE. I would say that in the interstate carrier program, they are doing an adequate job within the limits of their resources. If you are talking about bottled water sold in interstate commerce——

The CHAIRMAN. Well, yes, and water in transportation, airplanes, railroads, bus lines, inland waterways, and all those people that move in interstate commerce, that there isn't enough inspection, or yearly inspection to see what the water is like.

Mr. DENSMORE. That is true, they are not making the number of sanitary surveys, but as far as——

The CHAIRMAN. Now that gets down to the fact that most of the water in interstate commerce other than bottled water is supplied by the local communities. When an airplane lands at a certain spot and they need some water to put aboard they get it from the local supply.

Mr. ESCHWEGE. That's correct.

The CHAIRMAN. And your report surely shows that many of the local supplies are somewhat suspect.

Mr. ESCHWEGE. Yes, but——

The CHAIRMAN. They don't have the chance to look at it, isn't that correct?

Mr. ESCHWEGE. They are somewhat suspect, but if the EPA and the FDA determine that the water is not meeting the standards, they will tell the particular interstate carrier that he can no longer draw the water from that particular system.

The CHAIRMAN. They can check on it and find out if some of them reach the minimum standards, minimum guidelines.

Mr. ESCHWEGE. What we have said here today is that—while the carrier will no longer carry this water, the systems will continue to provide this water to the communities because EPA or FDA have no authority to enforce its standards against the local system.

The CHAIRMAN. That is what I was coming to. They have no authority to enforce the standards with respect to local systems.

Mr. ESCHWEGE. Right.

The CHAIRMAN. Now how many States have standards, all of them?

Mr. DENSMORE. All of the States have adopted the drinking water standards either as regulations or as guidelines.

The CHAIRMAN. Do those standards generally comply with the minimum Federal standards?

Mr. ESCHWEGE. The standards that have been adopted at least in the six States we looked at were in compliance with the Federal

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standards. Our problem was with the implementation of these standards.

The CHAIRMAN. That's right. And that is due, when you get right down to it, to lack of funds of the State legislature, which cannot then give the department who is in charge of this at the State level sufficient money to do the kind of inspections that it should do, isn't that correct?

Mr. ESCHWEGE. This is certainly a factor and especially the factor in the rural, smaller type of systems.

The CHAIRMAN. There are two bills here, one that I have sponsored and the so-called administration bill. One of the great differences between the two is that the fact that we would give some aid to the States who obviously couldn't afford to do the kind of a job that should be done on their drinking water, or would at least give them a start to do the job. And then they might continue later when they find out what is being done when they find their water systems need to be upgraded, isn't that correct?

Mr. ESCHWEGE. Yes.

The CHAIRMAN. As I understand it, you endorse S.433?

Mr. ESCHWEGE. Well, we do not want to get into the policy matters of S. 433, but we endorse the spirit of the bill.

The CHAIRMAN. Yes.

Mr. ESCHWEGE. Which tends to tighten up on some enforcement measures and——

The CHAIRMAN. The real difference is how far the Federal Government wants to go: whether we go as far as making some grants which would naturally have to be matching grants for the States, or whether we just establish the guidelines and maybe some enforcement procedures because EPA now can't enforce anything except on interstate carriers. And just leave it there, in the hopes that something would happen with the local systems, isn't that correct?

Mr. ESCHWEGE. Well, we have not really in our statement gotten into the matter of how much funding is required. We do point out that these smaller systems are having a hard time. I think the larger cities are being financed to a large extent by user charges. There is a question, of course, how much more you can raise these user charges in order to make these systems effective.

The CHAIRMAN. What did you find? I am, of course, naturally interested in what you found out in my state. Did you find that the large systems such as Seattle, for instance, comformed to a higher standard of inspection and things of those kind than the smaller systems?

Mr. ESCHWEGE. Yes, sir. I think in the State of Washington, as well as in other States, the larger systems tend to be the more effective ones and tend to adhere more to the standards, and have operators that are certified and trained.

The CHAIRMAN. Can you say, was Seattle under par?

Mr. ESCHWEGE. I understand it was.[1]

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[1] The response should be changed because of a misinterpretation of the question asked by the Chairman.

In responding "I understand it was" we thought that the question asked was "Can you say, was Seattle *up to* par?"

The response to the Chairman's question as asked should be "I understand it was not."

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The CHAIRMAN. It was?

Well, we will get the details of that when you get your final report. I don't think that any of us on this committee wants to scare anybody and say that you can't drink the water. We are trying to just improve the drinking water, and provide more inspection, to be sure that we are doing the right thing, isn't that correct?

Mr. ESCHWEGE. That is correct.

The CHAIRMAN. And it may be that after having had complete inspection and having done the things that the bills require, they still would be all right. But in some cases, we just don't know. Too much time elapses before they get at it.

Mr. ESCHWEGE. That is right, and scientists now tell us that there may be some other factors in the drinking water that we have not considered and maybe need to be considered when establishing drinking water standards.

The CHAIRMAN. For instance, some systems have old transmission lines. I know, that the city of Seattle still has some wooden transmission lines under the ground. One of them could rot out, a section could rot out and we wouldn't know what would happen unless you had a pretty good continuous inspection. Of course, Seattle has the manpower. Some of the smaller ones don't. And as you point out, too few people realize that some water systems are manned only part time, and by anyone they can get, so that sometimes they are not too efficient in watching things.

But when you have wooden mains, water mains, you can run into some trouble.

Mr. ESCHWEGE. Yes, sir.

The CHAIRMAN. Now, does fluoridation enter into these standards? Does it have anything to do with them, one way or the other?

Mr. ESCHWEGE. Well, as I understand it, it kills the bacteria that may be present in the water.

The CHAIRMAN. It kills bacteria such as chlorination?

Mr. ESCHWEGE. Chlorination.

The CHAIRMAN. Are you sure?

Mr. ESCHWEGE. Oh your first question was fluoridation, I am sorry, I understood that question to be on chlorination rather than fluoridation.

The CHAIRMAN. Yes, fluoridation, There is always an argument about that going on.

Mr. DENSMORE. Yes.

The CHAIRMAN. Does fluoridation affect the quality of the water?

Mr. DENSMORE. That is primarily to make——

The CHAIRMAN. As set out by these standards?

Mr. DENSMORE. Yes, sir. One of the chemical standards is for fluoride and it is mandatory. It is a health standard that should not be exceeded.

The CHAIRMAN. You have looked at six States, isn't that correct?

Mr. ESCHWEGE. That is correct.

The CHAIRMAN. Including mine. Would you say generally that those six States would be somewhat typical of other States you didn't look at, from your general observation or general knowledge?

Mr. ESCHWEGE. Well, I would say this——

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The CHAIRMAN. I mean, would you find the same thing, practically, in other States?

Mr. ESCHWEGE. We have looked at the community water supply study that was made by the EPA. And I think that for the States we went to, the results were pretty much the same as the study that was made somewhat earlier by EPA. So if you take the two together, you might say it is pretty typical, although I wouldn't want to project it outright and say——

The CHAIRMAN. Well, I wouldn't want to suggest to you that the six States you looked at are worse than any other States. It might be the same kinds of problems.

Mr. ESCHWEGE. That is correct.

The CHAIRMAN. In other States in the union.

Mr. ESCHWEGE. Yes, sir.

The CHAIRMAN. Subject to their interpretation or their enforcement, implementation of the laws they have, of which he says all States do have some minimum standards.

Mr. ESCHWEGE. That is right.

The CHAIRMAN. Would you suggest saying in the bill that if after a period of time, say, the EPA should cite a State as not having the kind of laws it should have, the Federal law should then apply?

Mr. ESCHWEGE. As a private citizen and consumer of water, I certainly would want someone to step in, if the local governments are not——

The CHAIRMAN. Are not in compliance.

Mr. ESCHWEGE [continuing]. Shaping up to the standards, yes, sir.

The CHAIRMAN. That the Federal law would then apply?

Mr. ESCHWEGE. That is right.

The CHAIRMAN. But most States do have laws, as I understand it, that come pretty close to the type of standards we are talking about, isn't that correct?

Mr. ESCHWEGE. That is correct, and I think we are talking more here about the implementation of these standards.

The CHAIRMAN. Implementation. It seems to me that when you get your final report in, that we ought not only to enact a Federal law, but also tell the States, the State legislatures, that they ought to pay a little more attention to the implementation of their own State law in this particular field.

Mr. ESCHWEGE. Yes, sir.

The CHAIRMAN. And that is a question, I suppose, of money and of people and laboratories.

Mr. ESCHWEGE. That is correct.

The CHAIRMAN. And now in most States, it seems to me, say, a small community that might have an artesian well system, can take samples of their water to any of the schools,—such as, in my State, the University of Washington or Washington State—and get it analyzed free. But maybe some of them just don't do it.

But you also point out, even if they do do it in the beginning, they don't follow through and they don't do it enough.

Mr. ESCHWEGE. That is correct in many cases, they don't do it often enough.

The CHAIRMAN. Now, we have no great pride of authorship about bills of this kind. We know that they are working papers for us,

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and we want to get a bill out if we can that is going to be not only practical but do the job, and alert people to the problems, which this one would do. So we are going to welcome any modifications to these bills or any suggestions that you people may have as you move along, based upon your experience from making this study. There may be some things you would want us to do and we would welcome that. We always do.

But I do think something has got to be done about this. We have good water systems in most places in the country and they try hard to give the best water possible. But the lack of funds sometimes does create the situation you pointed out and I think the Federal Government has some responsibility in this field, because drinking water is a national problem in all communities and we ought to do what we can, at least give them the benefit of what expertise we may have in this field.

Many of them don't have the technical knowledge to do what should be done, and you can go into any of these smaller communities or even large communities, and you will find in almost every election there will be a water bond issue on the ballot. And that is usually to try to keep up with maintenance of the system, the water mains, to give pure water, and sometimes they don't pass, and it sits there for 2 or 3 years, until the next election. There is no excuse for the States not implementing the laws that they have now until we can get at this problem, and I think the result of your study and these hearings may be to alert them to the fact that they should.

Mr. ESCHWEGE. I hope so.

The CHAIRMAN. That is all I have to say.

Senator HART. I think Chairman Magnuson has commented that your study, the summary of which you gave us today, could be a goad and a reason that would persuade everyone involved to understand their failures, to more clearly understand the hazards and, perhaps, as Senator Magnuson said, cause us all to go to work on them. Generally around here we are against some business or labor organization for its failure to adhere to regulations or to meet standards, but, as I take it, your report is directed largely to the failure of governmental agencies to adhere to standards, isn't that right?

Mr. ESCHWEGE. That is right.

Senator HART. Their alibi is the alibi we hear from the private community—the money shortage, lack of skill.

Mr. ESCHWEGE. That is right.

Senator HART. For the record, would it be possible to provide a tabulation of the six States surveyed to show the variations—not to make a judgment as to which State is the best and which the worst, but rather to identify more particularly the variations from the study; is that possible?

Mr. ESCHWEGE. Yes, we can do that.

Senator HART. Now, you say that in West Virginia, 415 out of 615 water supply systems need to be renovated or replaced because of deficiencies in facilities.

On facility replacement, how about the other five States?

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Mr. ESCHWEGE. Yes, we have had some problems in other States as well.

For instance, in the State of Washington, we were told that as of October 1972, water quality improvement needs of all class I systems in Washington amounted to over $100 million. In other words, needs for facilities. Another example is in Vermont, where a study was prepared in January 1972 estimating that the cost of water quality improvement throughout the State to be over $58 million.

Now, what we are saying though in our statement is, not everything has to be done immediately. Sometimes just taking care of the bacteriological problems could be much less expensive than to try and do the whole thing all at once, such as replacing entire facilities.

Senator HART. Do you have those figures on Maryland and Massachusetts?

Mr. ESCHWEGE. Maryland? Yes. It was estimated that the cost to improve water supply systems in the state of Maryland would range, and here is a big range, of anywhere between $20 million to $200 million, These are not our figures, these are just figures we got in conversations with State officials.

The CHAIRMAN. You say Washington would be about $100 million?

Mr. ESCHWEGE. About $100 million. For class I systems. I am told that the total for all systems would be $240 million. I have been talking about class I systems.

Senator HART. That is the total figure developed from the six States?

Mr. ESCHWEGE. No, this was again the State of Washington. Senator Magnuson asked me about the one in Washington. I had given the figure of $100 million for the State of Washington for class I systems.

The CHAIRMAN. For what?

Mr. ESCHWEGE. Class I systems. For all systems it would be $240 million.

Senator HART. All right. We have had Washington, Vermont, and Maryland.

Mr. ESCHWEGE. We don't have any figures for Massachusetts. In Oregon, the estimate is $25 to $200 million. And West Virginia, was about $243 million. This is an estimate made in December, 1971.

Senator HART. I am not sure that the GAO would permit you to answer, but do you have an opinion as to the capacity of the several States just named to meet financially the job that you have described in those round figures?

Mr. ESCHWEGE. Well, I can give you my opinion, sir. As I mentioned a little bit earlier, for the larger systems there might be a possibility, in some cities, to increase the user charges. I know my own user charges have been increased. I have serious doubts that the smaller systems in rural areas could really finance their own improvements. And to what extent the State can help them, I am just not sure. And of course if the State cannot do it, I suppose the last resort is the Federal Government.

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Senator HART. I am advised that the staff has obtained from the Library of Congress an evaluation of local financing of works of this sort.

The CHAIRMAN. Well, I am just making a statement here but it seems to me that to most people this seems like vast sums of money; but if you had to have bond issues for that most people would be willing to pay even a little more for water if they knew it was going to be upgraded to meet these needs and these requirements. I don't think there would be too much resistance to that.

It wouldn't amount to a great deal in the water bill but they would know they were getting safe water and it was meeting the standards. And this is more important to them than when they get a bond issue for schools or streets or things of that kind, or even electricity. This is the main thing that they want to be sure meets the standards, and if the system does not, I think the American users of water would be willing too pay for it. I really do.

But I think the Federal Government still has some responsibility to match some of these places where there is a serious problem. And they can't meet it as you say.

Mr. ESCHWEGE. Right, especially the small systems which serve as little as 500 people. It's very difficult.

The CHAIRMAN. At least engineering and planning and doing the right thing. And if they do the right thing, as they continue to build up their capital outlays on their water system, it may not cost any more at all in the long run if they do it right. And some of them do not have the technical knowledge or the expertise to do it. And that is the purpose of both these bills.

Mr. ESCHWEGE. Yes.

Senator HART. Early in your statement, you say that over the years the number of outbreaks of waterborne diseases has decreased substantially. That seems not to agree with the EPA studies. Is this explained by differing years, periods over which you made the comparison?

Mr. ESCHWEGE. Well, this material was taken from data of the American Water Works Association. And it has decreased over the years from 399 outbreaks in the period of 1920 to 1936, to well, that is a longer period, 16 years, but it's down to 128 in the 1961–70 period. And these are outbreaks which result in illnesses or death and almost immediately can be identified with some bacteriological problem in the water. What we are told though is that there are other adverse effects that could happen that are not so easily identified at this time with drinking water.

And because so much of the waste water is now repurified not just once but more than once, the scientists seem to think that there is more danger now, that it might have effects on the health of an individual in terms of long-range effects. So that the statistics to which I referred cover only outbreaks which result immediately in some illness or death.

Senator HART. My impressions is that the EPA studies indicate a trend of an increase in frequency of disease outbreaks, waterborne related disease outbreaks.

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Mr. ESCHWEGE. Now we are talking about lengthy periods of time going up to 1970. There may be something more recent than that. We have read some of it in the newspapers and it was alluded to by Congressman Robison before.

Senator HART. That was my impression, we can clarify that. You had an exchange with Senator Magnuson on the adequacy of the Federal agencies performance with respect to enforcement of the interstate carrier responsibilities. I am not sure I understand exactly how you grade that performance. You said in response to his question, that they do a fair job. But I got the impression from your prepared testimony that the enforcement is rather poor.

Mr. ESCHWEGE. I think it's not entirely satisfactory. But what I think our testimony was trying to point out also is that EPA is very much limited——

Senator HART. This is the point.

Mr. ESCHWEGE. In how effective it can be, to this limited area under which it has authority. And that even though EPA identifies a water system as being deficient it has no power whatsoever to tell the State that it should stop providing this kind of water to its consumers.

Senator HART. It is true that they lack sanction.

Mr. ESCHWEGE. Yes.

Senator HART. They had failed to get certified laboratory analyses in 17 out of 67 cases.

Mr. ESCHWEGE. Yes. Of course what we are saying there is that such analyses are the States'responsibility. In at least some of the cases where EPA found that there were deficiencies, they would prohibit the use of the State's water by interstate carriers.

Senator HART. On the business of the bottled water, to the extent that the affluent influence is the enactment of legislation around here maybe we ought to stress the fact that people who can afford and do buy bottled water may not be any better off. And that they should encourage Congress to move.

Your survey of bottled water indicates that States do not give even as much attention to bottled water as they give to tap water. Do I understand you correctly?

Mr. ESCHWEGE. That is right. Whereas for interstate carriers you at least have some standards to apply, up until now there have not been any standards applied to bottled water. And, as we pointed out in a number of these States, there was no surveillance over even interstate bottled water coming in from outside the State or outside the country.

Senator HART. Are there any problems peculiar to bottled water that are not associated in terms of regulation with tap water?

Mr. ESCHWEGE. Well, the one thing we mentioned was the mineral water situation where they are moving now in the direction of prescribing standards for bottled water, except mineral water because mineral water, we are told, cannot meet these standards. And this is a kind of a peculiarity. We think at least the mineral water that is bottled should be labeled to show the factors which exceed the maximum provided by the standard. There may be good health reasons why the standards do not apply. Of course, we are not scientists to be able to decide on that one.

Senator HART. Well, we will pursue it with those who do have

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that background because it would seem to me prudent that the regulations reach the mineral water also. You discussed, I think, with Senator Magnuson, the problem of manpower, you say that certified water treatment operators man primarily the larger systems, and yet our problems are largely with the smaller systems.

Is the absence of trained manpower, improper supervision, inadequate training, the cause of the problems with the small systems?

Mr. ESCHWEGE. I don't think that I can quantify it particularly, but it would seem to be logical that you do need some knowledgeable people for these smaller systems which are often pretty old systems. And there is a real problem here, and I must sympathize with the localities on that one, because they just don't have the money or can't spare these people to go to training schools and to become certified.

And as we pointed out, once they are certified, they go out to the bigger systems where probably they can earn more money.

Senator HART. You reported on the three Federal agencies, the Corps, National Park Service and the Forest Service. You found their drinking water programs inadequate. Has their response to your message been adequate?

Mr. ESCHWEGE. Well, all three agencies, I would say, generally agreed with our findings. And they replied to us on various dates that they had taken or were going to take action. For example, the Corps stated that they would circulate a letter to all Corps divisions and districts, providing guidance for operating and testing potable water systems. But this was back in December, and as of May, they hadn't sent the letter.

So there is some problem in the implementation, although they agree with us that something needs to be done. And this is true for the Forest Service. The National Park Service has taken action in this area.

Senator HART. Well, we conclude as we opened, the traditional congressional hearing is zeroing in on some failure, or outrage by private business or trade union or some professional organization, and you have just described the kind of conduct that if it was engaged in by private business would be subject to sharp criticism by a congressional committee. I think you have to treat government at least the same way, and challenge them to move, too. And if it is a shortage of money, then Senator Magnuson can take care of it.

Gentlemen, thank you very much.

The CHAIRMAN. I want to compliment you again on this fine report.

Mr. ESCHWEGE. Thank you.

The CHAIRMAN. We are looking forward to the completed report. And again I will reiterate, if you have any suggestions as a result of your study to make this legislation more effective or more practical, we will consider them. Just tell us, because this is a new field for us and we may not have the right bill.

But we have to have some enforcement so that this is done. And some way to see that there can't be any stalling. And then there has to be also some discretion because water systems are different in different places. The sources are different. What might apply to well water, artesian water, may not apply to most of the water systems in my State, which come from snow water on top of mountains. And

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sometimes that causes a problem, low water, which is no fault of the water system.

Senator HART. Thanks very much.

Mr. ESCHWEGE. Thank you.

[The following information was subsequently received for the record:]

CLASSIFICATION[1] OF SYSTEMS REVIEWED BY GAO FOR YEAR ENDED MAR. 31, 1972—BY POPULATION CATEGORIES

Population served	Total number of systems sampled	Classification				
		Approved	Provisional due to—		Prohibited due to—	
			Water quality	Bacteriological monitoring	Water quality	Bacteriological monitoring
Under 500	183	11	22	48	46	93
501 to 5,000	124	16	18	29	20	65
5,001 to 10,000	33	2	2	10	2	17
10,001 to 25,000	37	5		8	5	20
25,001 to 50,000	27	10	2	9	3	6
50,001 to 100,000	28	6		5	5	14
Over 100,000	14	10		3		1
Total	446	60	44	112	81	207

[1] Based on EPA's program for evaluating and classifying interstate carrier water supply systems.

CLASSIFICATION[1] OF SYSTEMS REVIEWED BY GAO FOR YEAR ENDED MAR. 31, 1972—BY STATE

State	Total number of systems sampled	Classification				
		Approved	Provisional due to—		Prohibited due to—	
			Water quality	Bacteriological monitoring	Water quality	Bacteriological monitoring
Maryland	41	7	3	17	0	14
Massachusetts	82	7	1	6	11	67
Oregon	64	25	9	18	10	4
Vermont	61	0	6	2	31	34
Washington	127	7	14	43	24	63
West Virginia	71	14	11	26	5	25
Total	446	60	44	112	81	207

[1] Based on EPA's program for evaluating and classifying interstate carrier water supply systems.

CLASSIFICATION[1] OF SYSTEMS REVIEWED BY GAO IN MARYLAND FOR YEAR ENDED MAR. 31, 1972—BY POPULATION CATEGORIES

Population served	Total number of systems sampled	Classification				
		Approved	Provisional due to—		Prohibited due to—	
			Water quality	Bacteriological monitoring	Water quality	Bacteriological monitoring
Under 500	14	1	1	5	0	7
501 to 5,000	12	4	1	2	0	5
5,001 to 10,000	4	0	1	3	0	0
10,001 to 25,000	3	0	0	3	0	0
25,001 to 50,000	3	1	0	1	0	1
50,001 to 100,000	2	0	0	1	0	1
Over 100,000	3	1	0	2	0	0
Total	41	7	3	17	0	14

[1] Based on EPA's program for evaluating and classifying interstate carrier water supply systems.

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CLASSIFICATION[1] OF SYSTEMS REVIEWED BY GAO IN MASSACHUSETTS FOR YEAR ENDED MAR. 31, 1972—BY POPULATION CATEGORIES

Population served	Total number of systems sampled	Classification				
			Provisional due to—		Prohibited due to—	
		Approved	Water quality	Bacteriological monitoring	Water quality	Bacteriological monitoring
Under 500	2				2	2
501 to 5,000	23	1			3	22
5,001 to 10,000	12					12
10,001 to 25,000	15					15
25,001 to 50,000	7		1	4	2	2
50,001 to 100,000	18	2		2	4	13
Over 100,000	5	4				1
Total	82	7	1	6	11	67

[1] Based on EPA's program for evaluating and classifying interstate carrier water supply systems.

CLASSIFICATION[1] OF SYSTEMS REVIEWED BY GAO IN OREGON FOR YEAR ENDED MAR. 31, 1972—BY POPULATION CATEGORIES

Under 500	24	7	4	7	6	3
501 to 5,000	21	5	5	7	3	1
5,001 to 10,000	5	2		1	1	
10,001 to 25,000	5	3		2		
25,001 to 50,000	6	5		1		
50,001 to 100,000	2	2				
Over 100,000	1	1				
Total	64	25	9	18	10	4

CLASSIFICATION[1] OF SYSTEMS REVIEWED BY GAO IN VERMONT FOR YEAR ENDED MAR. 31, 1972—BY POPULATION CATEGORIES

Under 500	39		3	1	18	26
501 to 5,000	15		2	1	9	6
5,001 to 10,000	2				1	1
10,001 to 25,000	4				3	1
25,001 to 50,000	1		1			
50,001 to 100,000						
Over 100,000						
Total	61		6	2	31	34

CLASSIFICATION[1] OF SYSTEMS REVIEWED BY GAO IN WASHINGTON FOR YEAR ENDED MAR. 31, 1972—BY POPULATION CATEGORIES

Under 500	78	1	10	26	15	42
501 to 5,000	28	2	4	9	5	14
5,001 to 10,000	5			2		3
10,001 to 25,000	5			2	2	2
25,001 to 50,000	6	2		2	1	2
50,001 to 100,000	2			1	1	
Over 100,000	3	2		1		
Total	127	7	14	43	24	63

[1] Based on EPA's program for evaluating and classifying interstate carrier water supply systems.

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CLASSIFICATIONS [1] OF SYSTEMS REVIEWED BY GAO IN WEST VIRGINIA FOR YEAR ENDED MAR. 31, 1972—BY POPULATION CATEGORIES

Under 500	26	2	4	9	5	13
501 to 5,000	25	4	6	10		8
5,001 to 10,000	5		1	4		1
10,001 to 25,000	5	2		1		2
25,001 to 50,000	4	2		1		1
50,001 to 100,000	4	2		1		
Over 100,000	2	2				
Total	71	14	11	26	5	25

[1] Based on EPA's program for evaluating and classifying interstate carrier water supply systems.

MARYLAND

BACTERIOLOGICAL STANDARDS AND SAMPLING

Maryland's bacteriological sampling requirements and standards for water quality were identical to the Federal drinking water standards.

Under EPA's program for evaluating and classifying interstate carrier water supply systems, the 41 systems whose records we reviewed in Maryland could be classified as follows: 7 approved, 20 provisionally approved, and 14 prohibited.

Systems were classified as provisionally approved and prohibited because they were tested less frequently than recommended in the Federal standards and/or they were delivering water whose bacteria content exceeded the limits of the standards.

CHEMICAL STANDARDS AND SAMPLING

Maryland had adopted the Federal chemical standards and required that chemical analyses be made on an annual basis.

As of August 1972, 27% of Maryland's systems had not had a chemical analysis within the past year.

We also noted in our review that Maryland was testing for only 10 of the 20 chemicals listed in the Federal standards.

SANITARY SURVEYS

Our review of 41 supply systems in Maryland showed that 37 had been surveyed by the State at least once in fiscal year 1972. Maryland's goal is to make quarterly surveys at all systems.

CROSS-CONNECTIONS

Maryland recently established a program for identifying and eliminating health hazards associated with cross-connections.

Previously Maryland relied on the State's licensed plumbers and its building permit program for controlling cross-connections in new construction.

OPERATOR CERTIFICATION

Maryland had a mandatory certification program effective since 1967.

Forty-two percent of the State's operators were certified as of April 1972.

FACILITIES

A State official estimated that the cost to improve water supply systems in the State would range from $20 million to $200 million.

MASSACHUSETTS

BACTERIOLOGICAL STANDARDS AND SAMPLING

Massachusetts had adopted water quality standards that were similar to the Federal standards but required only one-half the number of samples recommended in the Federal drinking water standards.

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Under EPA's program for evaluating and classifying interstate carrier water supply systems, the 82 systems whose records we reviewed in Massachusetts could be classified as follows: 7 approved, 6 provisionally approved, and 69 prohibited.

Systems were classified as provisionally approved and prohibited because they were tested less frequently than recommended in the Federal standards and/or they were delivering water whose bacteria content exceeded the limits of the standards.

CHEMICAL STANDARDS AND SAMPLING

Massachusetts had adopted the Federal chemical standards and required chemical analysis on an annual basis.

The State was performing chemical analyses on an annual basis, but did not make analyses for any of the 9 chemicals included in the Federal health standards, and performed analyses for only 8 of the chemicals contained in the Federal aesthetic standards.

SANITARY SURVEYS

In Massachusetts, periodic surveys had been discontinued in 1966. Since then, surveys had been made only when new supply systems were constructed or when problems arose.

CROSS-CONNECTIONS

Massachusetts State law required that each cross-connection be approved and licensed annually.

Until January 1972, most of the 1,300 licensed cross-connections were inspected annually by State personnel, but because of decreased staffing only about 50 percent of the known cross-connections were inspected during 1972. One State official told us that there were probably as many as 100,000 cross-connections in the State.

OPERATOR CERTIFICATION

State legislation, effective July 1, 1972, required certification of plant operators but State officials informed us that the program will not be implemented until July 1973 because of a lack of sufficient funding.

FACILITIES

No cost figures available for Massachusetts.

OREGON

BACTERIOLOGICAL STANDARDS AND SAMPLING

Oregon had adopted the Federal drinking water standards but required that fewer samples be submitted to the State for bacteriological analysis.

Under EPA's program for evaluating and classifying interstate carrier water supply systems, the 64 systems whose records we reviewed in Oregon could be classified as follows: 25 approved, 25 provisionally approved, and 14 prohibited.

Systems were classified as provisionally approved and prohibited because they were tested less frequently than recommended in the Federal standards and/or they were delivering water whose bacteria content exceeded the limits of the standards.

CHEMICAL STANDARDS AND SAMPLING

Oregon had adopted the Federal chemical standards and required chemical testing when a water supply was first used, but had not required periodic sampling thereafter. In August 1972, Oregon required large systems to have their water analyzed at least once every three years, and smaller systems at least once every five years.

As of March 1972, the most recent chemical analyses for the water supplies we reviewed were an average of 7 years old.

SANITARY SURVEYS

In August 1972, Oregon established a requirement for State surveys of supply systems every five years. Prior to that date sanitary surveys had been constructed for only 197 of the State's 510 large supply systems during the past five years.

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CROSS-CONNECTIONS

In Oregon, the individual water supply systems had the primary responsibility for control of cross-connections.

Only 8 of the 510 water supply systems in the State had active cross-connection control programs.

OPERATOR CERTIFICATION

Oregon had a voluntary certification program effective since 1954.

Twenty-eight percent of the State's operators were certified as of May 1972.

FACILITIES

State officials estimated that it would cost from $25 million to $200 million to correct the facility deficiencies in Oregon water systems.

VERMONT

BACTERIOLOGICAL STANDARDS AND SAMPLING

Vermont's bacteriological sampling requirements and standards for water quality were identical to the Federal drinking water standards.

Under EPA's program for evaluating and classifying interstate carrier water supply systems, the 61 systems whose records we reviewed in Vermont could be classified as follows: None approved, 8 provisionally approved, and 53 prohibited.

Systems were classified as provisionally approved and prohibited because they tested less frequently than recommended in the Federal standards and/or they were delivering water whose bacteria content exceeded the limits of the standards.

CHEMICAL STANDARDS AND SAMPLING

Vermont had adopted the Federal chemical standards and required chemical analysis on an annual basis.

As of August 1972, 49% of Vermont's systems had not had a chemical analysis within the past year.

The State also did not make analyses for 13 of the 20 chemicals included in the Federal health and aesthetic standards.

SANITARY SURVEYS

Vermont tried to survey all public water supplies at least once each year but has not been successful because of staff limitations. The State has 4 inspectors to survey 286 systems.

CROSS-CONNECTIONS

State regulations, effective August 1971, prohibit cross-connections unless they are approved by the Division of Environmental Health (DEH).

DEH officials were not aware of any cross-connection control programs and they were unable to estimate the number of cross-connections in the State.

OPERATOR CERTIFICATION

Vermont had a mandatory certification program effective since December 1971.

Information was not available on the percent of operators certified in the State.

FACILITIES

A study prepared for the State in January 1972 estimated that the cost of improving facilities throughout the State was over $58 million.

WASHINGTON

BACTERIOLOGICAL STANDARDS AND SAMPLING

Washington's bacteriological sampling requirements and standards for water quality are identical to the Federal drinking water standards.

Under EPA's program for evaluating and classifying interstate carrier water supply systems, the 127 systems whose records we reviewed in Washington could be classified as follows: 7 approved, 43 provisionally approved, and 72 prohibited.

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Systems were classified as provisionally approved and prohibited because they were tested less frequently than recommended in the Federal standards and/or they were delivering water whose bacteria content exceeded the limits of the standards.

CHEMICAL STANDARDS AND SAMPLING

Washington had adopted the Federal chemical standards and required its water supplies to be analyzed for chemical content on an annual basis.

As of August 1972, 65% of Washington's systems had not had a chemical analysis within the past year.

We also noted in our review that chemical analyses were made for only 1 of the 9 substances identified in the Federal standards as potential health hazards and for only 6 of the substances which can cause offense to the user.

We also noted in our review that chemical analyses were made for one one of the nine substances identified in the Federal standards as potential health hazards and for only six of the substances which can cause offense to the user.

SANITARY SURVEYS

No State requirement for sanitary surveys.

Although Washington does not make sanitary surveys, it required it's larger supply systems to submit annual reports which contain much of the information obtained during sanitary surveys.

CROSS-CONNECTIONS

Water systems are required to establish programs for control of cross-connections.

Although 400 of Washington's larger water supply systems had been instructed to establish cross-connection control programs, only 2 or 3 of the systems, according to State officials had effective programs as of October 1972.

OPERATOR CERTIFICATION

Washington has a voluntary certification program effective since 1963.

Only 4% of the systems in Washington were operated by certified operators as of July 1972.

FACILITIES

State officials estimated that as of October 1972, water quality improvement (water treatment and reservoir covers) needs of all Class I systems in Washington amounted to over $100 million.

West Virginia

BACTERIOLOGICAL STANDARDS AND SAMPLING

West Virginia's bacteriological sampling requirements and standards for water quality were identical to the Federal drinking water standards.

Under EPA's program for evaluating and classifying interstate carrier water supply systems, the 71 systems whose records we reviewed in West Virginia could be classified as follows: 14 approved, 31 provisionally approved, and 26 prohibited.

Systems were classified as provisionally approved and prohibited because they were tested less frequently than recommended in the Federal standards and/or they were delivering water whose bacteria content exceeded the limits of the standards.

CHEMICAL STANDARDS AND SAMPLING

West Virginia had adopted the Federal chemical standards and required chemical analysis on an annual basis.

As of August 1972, 45% of West Virginia's systems had not had a chemical analyses within the past year.

Where chemical analyses were made, the State did not test for 7 of the 20 constituents contained in the Federal standards.

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SANITARY SURVEYS

State regulations require one inspection a year at each of the public water supply systems.

In fiscal year 1972, West Virginia made surveys of 122 of the State's 615 water supply systems.

CROSS-CONNECTIONS

State regulations do not permit cross-connections.

State officials told us, however, that the State's cross-connection control program was practically non-existent due to staffing limitations. There have been no statistics complied on the number of possible cross-connections in West Virginia.

OPERATOR CERTIFICATION

West Virginia had a mandatory certification program effective since 1933.

Seventy-eight percent of the State's operators were certified as of May 1972.

FACILITIES

State officials estimated in December 1971 that the cost for improving public water supply facilities in West Virginia was over $243 million.

Senator HART. Next when we talk about a goad to action, this is the individual whom we usually cite. We will have testimony from Mr. Ralph Nader. Mr. Nader is accompanied by Dr. Robert Harris, assistant professor of environmental engineering, University of Maryland.

Gentlemen, we welcome you.

STATEMENT OF RALPH NADER; ACCOMPANIED BY ROBERT H. HARRIS, ASSISTANT PROFESSOR OF ENVIRONMENTAL ENGINEERING, UNIVERSITY OF MARYLAND

Mr. NADER. Thank you, Mr. Chairman, Senator Magnuson, for the invitation to comment on S. 433, the Safe Drinking Water Act. With me today is Dr. Robert Harris, assistant professor of environmental engineering, University of Maryland. Dr. Harris has been working with me for the past year on the problems of drinking water quality.

Inadequacies documented by the Community Water Supply Study of 1969 come at a time when Federal appropriations for research, surveillance, and funding of improvement projects continue to be grossly inadequate; when we are becoming increasingly aware of the detrimental effects of chronic exposure to trace contaminants, contaminants which are normally not removed by existing water treatment practices even under the best of conditions; and when the pollution of surface and ground waters is still on the increase.

The fact that the presence of viruses and recalcitrant toxic organic compounds have been repeatedly demonstrated in drinking water that has received so-called complete treatment should be cause in itself for alarm, even if gross inadequacies in the expected performance of water purification plants had not been demonstrated by the Community Water Supply Study.

It is not difficult to appreciate why these recalcitrant contaminants escape the purification process. Current technology relies almost exclusively upon innovations of the latter 19th and early 20th centu-

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ries when treatment strategy focused on the need to remove bacterial pathogens.

In a recent comparison of current and past water treatment practices, Professors J. E. Singley and A. P. Black noted, despite the advances in the electrical and mechanical controls in treatment plants that:

> Approaching the treatment units, however, the calendar rolls back 50 years and one is faced with the melancholy fact that water treatment is still an art and not a science. One sees before him the same old mixing basins, flocculators, and sedimentation basins that have served as treatment units for more than five decades . . . the engineer has been slow to realize that many new advances in treatment methods or materials are at his disposal. The conservatism in the design of water treatment units is also caused by the fact that, in many cases, engineers are required by regulatory agencies to follow arbitrary design criteria, some of which have been obsolete for many years.

It is sort of like the building codes holding back architectural innovations or materials innovations. It is these latter points—the lethargy of engineers in accepting new technologies and the restrictive design criteria issued by State regulatory agencies—that are at the heart of an outmoded strategy for purifying drinking water. This alarming state of affairs is also underscored when it is considered that the present 1962 Public Health Service Drinking Water Standards—DWS—as well as the proposed 1971 revised drinking water standards, which still are not out completely in authoritative form, neither mention viruses nor deal adequately with toxic organics.

I might say, Mr. Chairman, that the basic psychological attitude of the public toward drinking water seems to be that if it doesn't pinch, it doesn't hurt. That is really the challenge of the whole pollution situation in the United States. The challenge is that if it doesn't pinch, it hurts.

This kind of silent violence of chemicals and gases and other contaminants which have a cumulative effect on human health simply does not display the overt traumatic display that a tornado or a fire would display to alert the public's urgency.

So it is going to be a more difficult problem because of that factor. Unless people realize that there are a lot of things in the environment and in their drinking water, that don't pinch, but they hurt plenty, particularly later on, there is not going to be as fast progress as there should be.

Take, for example, the toxic organic compounds. The manufacture of synthetic organic chemicals, which currently number about 12,000, has been increasing at the rate of about 500 each year.

Although over half the population in the United States receives its drinking water from surface water supplies, most of which are contaminated by organic wastes, little is known about the effects of ingesting these organics for long periods of time.

One of the few studies on the physiological effects of organic fractions in treated drinking water was conducted by W. C. Heuper and W. W. Payne on the water supply of Nitro, W. Va., so named because there is a DuPont plant there—Nitro, W. Va., on the Kanawha River. By demonstrating the carcinogenic—cancer causing—and

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lifeshortening properties of these organic fractions, they seemed justified in suggesting

> * * * that comprehensive chemical, experimental, and epidemiologic studies for ascertaining valid information must be undertaken in order to forestall a possible future development of a potentially catastrophic cancer epidemic among the general population of communities or regions exposed to carcinogens from such sources.

J. B. Andelman and M. J. Suess, writing in the Bulletin of the World Health Organization, sounded a similar alarm, concluding that:

> When one considers that animal experiments have shown that repeated exposure to carcinogens is more effective than an equivalent single dose, one should not neglect the possibility of cancer from the repeated life-long exposure to carcinogens in air, food, and water.

I might note parenthetically here that the cancer rate has increased dramatically in the last reporting period over the prior reporting period. And while certainly nobody can point to one single cancerous source for this epidemic, the environment, what people take in by virtue of contaminated drinking water, has to be a significant object of suspicion.

During their studies, Andelman and Suess observed that polynuclear aromatic hydrocarbons—PAH, which include many potent carcinogens—for example 3, 4-benzpyrene—have been repeatedly identified in treated drinking water.

Observing that there are no safe levels for chemical carcinogens, they strongly recommended that attention be given to reducing as far as practicable the amounts of carcinogenic PAH in drinking water.

You see, the problem of public attention here is really very difficult. It is going to be a while before people get up in the morning, fill a glass of water and wonder whether the cadmium levels are up. And unless we, through this legislation and these hearings, embark on a major education program, the support for the necessary investments and more effective purification processes and support for water pollution prevention at the source, which is the—obviously, the key strategy here, will not be forthcoming soon.

For instance, I consider drinking water contamination one of the top five consumer issues in the United States. But look at that press table. The Senate held their first hearings in 70 years last year on drinking water contamination. It is just not considered a visceral enough subject. In many ways, the glamour of the subject determines its level of communication to the public. And you know, for 10 years, there have been congressional hearings on water pollution and fish kills, and there is a—almost no attention until last year on probably the main serious consequence of water pollution, which is contaminated drinking water.

Beyond contaminated fisheries, the consequences of polluted drinking water are primarily aesthetic. It is contaminated fisheries and contaminated water, drinking water, and the extent to which the soil is contaminated by polluted runoffs.

And I think unless somebody finds the key to this dilemma of the lack of equivalence between the urgency of a public health problem

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and its communication glamour, we are going to wallow along in relative slowness in terms of progress.

Recently two independent regional laboratories of the EPA have isolated and identified toxic organic compounds in the treated drinking water supplied from the lower Mississippi River and in Evansville, Ind. The lower Mississippi River, affectionately known as the "colon of America," happens to be the source of drinking water for more than half of all the people in the State of Louisiana.

Sampling from the tap water at the U.S. Public Health Service Hospital at Carville and at the Carrollton purification plant in New Orleans, the EPA laboratory identified as many as 40 synthetic organic compounds.

This is in the drinking water.

Six of these compounds have been shown to induce histopathological changes in animals in chronic toxicity studies, and three of these compounds have been shown to be carcinogenic.

One doesn't know the effect of these compounds on Senator Long or other people in Louisiana who have been drinking these contaminated waters, but we certainly better find out.

However, chronic toxicity data are not available for most of these compounds, and the report warns that there may be a myriad of organic chemicals not yet isolated and identified.

After these findings, perhaps it is not surprising that New Orleans has been reported to rank third highest of 163 metropolitan areas for incidence of kidney cancer, sixth highest for cancer of the bladder and urinary organs, ninth highest for cancer of unspecified digestive organs, and has 2.6 times the national average incidence of tongue cancer fatalities and 3.5 times the national average incidence of cancer of other parts of the mouth.

It might be noted here that when one of my associates went down to inspect the purification system in New Orleans there was marked hostility evidenced by the operators of these plants in contrast to the more open reception operators of other purification plants around the country accorded these young scientists.

I just called the Chairman's attention to the fact that there are some areas in the country that might be considered really critical in terms of contaminated drinking water. For instance, in Evansville, Ind., over 40 organic compounds were detected and 13 were isolated and identified from the treated tap water supplied by the Ohio River.

Several of these compounds have been shown to be acutely toxic and/or carcinogenic. Two of the compounds present in highest concentration are acutely toxic and one is carcinogenic. Both were traced to a chemical manufacturing plant 150 miles upstream.

Further upstream, in the EPA's National Environmental Research Center—NERC—at Cincinnati, R. G. Tardiff and M. Deinzer have recently demonstrated the toxicity of the organics isolated from the tap water in Cincinnati, as well as providing further evidence of the toxicity of some 60 organic compounds identified by others as present in treated drinking water at one place or another.

Most of the compounds demonstrated depression of the central nervous system and pathological lesions of the liver and kidneys in

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animal experiments. Only one compound was non-toxic in acute toxicity testing.

Evidence that ground water supplies are subject to similar organic chemical contamination has recently been documented by A. D. Burnham and co-workers. For well water in Ames, Iowa, they were able to isolate and identify 14 potentially toxic organic compounds. The source of the contamination was believed to be the residues from a coal gas plant in Ames during the 1920s.

The issue of ground water which supplies a good deal of drinking water to America is going to be an increasingly serious one.

For instance, there have been proposals by the AEC of storing radioactive waste beneath the aquifer near their Savannah River operated plant. The Rio Blanco tests in Colorado which have been of serious concern to Senator Haskell have been cited as possible risk to the water supply in the Colorado River.

There is also increasing deep well disposal of lethal wastes by industrial plants underground which may have a seepage effect that is yet unknown.

Although there have been attempts to establish a relationship between quality of drinking water and cancer mortalities in England, the Netherlands, and Switzerland, the evidence is inconclusive. Nonetheless, as far back as 1964, a World Health Organization Committee on the Prevention of Cancer recommended that:

> Effective measures are needed to prevent the introduction of carcinogenic industrial wastes into the atmosphere and into public waters serving s sources of drinking water supply. * * * Although at present no clear evidence exists that such carcinogenic industrial contaminants of air and water have become an actual environmental cancer hazard to the general population, they should be viewed with serious concern, so as to forestall such complications in the future.

In the interest of time, I would like to skip over some paragraphs, with the request that it all be included in the record.

Senator HART. It will be printed in full.

Mr. NADER. Thank you.

There is little question that there are high concentrations of viruses in sewage effluents unless sophisticated advanced waste treatment processes are employed. Enteric viruses isolated from river water have been identified as those that cause poliomyelitis, aseptic meningitis, hepatitis, and many other respiratory and gastrointestinal diseases. Some of these same viruses have been implicated in other more serious illnesses and the possibility of tumor production by these enteroviruses has not been ruled out.

Yet methods are now available to detect small amounts of viruses in large amounts of water.

In light of the realization that existing technology is capable of substantial removal of toxic organics and viruses, one might ask then why this technology is not being used. To be certain there is a widespread attitude in the water works fraternity that "What you can't see won't hurt you." Others operate on the philosophy that a contaminant must be proven harmful before action is required. Somehow, they are able to reconcile the fact that the public becomes the "guinea pig" in this environmental version of Russian roulette.

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But perhaps a more serious obstacle is complete lack of responsiveness of the State and local regulatory agencies. This is particularly reflected in the State guidelines and standards for the design and operation of water purification plants. For example, consider the guidelines from three States—Pennsylvania, Wisconsin, and Missouri—Wisconsin has adopted the guidelines formulated by the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers:

First. Specific reference is not made in any of the guidelines to viruses, toxic organics or heavy metals.

It is like having auto safety standards that don't relate to tires, brakes, handling and crashworthiness.

Two. For the design of disinfection units, which can be used to most effectively assure elimination of viruses, Missouri explicitly disallows the use of disinfectants other than chlorine, while Pennsylvania and Wisconsin do so implicitly. This seems particularly debilitating when it is considered that ozone is a considerably stronger virucide than chlorine.

Third. Although a potentially practicable and economic method of organic removal is to replace sand in sand filters with granular activated carbon as is done in Nitro, W. Va., the Wisconsin standards make the use of sand mandatory, specifically disallowing the use of granular activated carbon. Similar requirements are mandated by the Pennsylvania and Missouri standards.

Although the intent of the regulatory agencies is, in the words of the Missouri guidelines, " * * * to encourage, rather than to obstruct the development of new processes and equipment * * * ," the result seems to have been just the opposite.

We have a very few recommendations for improved legislation in addition to the ones made in my testimony of last year.

The CHAIRMAN. Mr. Nader, you heard my statement to the GAO people that we want suggestions on this piece of legislation to make it as effective as possible, because we are all convinced that something is needed. We are making a start. This is a new field for us. And anything that you recommend or suggest here to make the bill a more effective one to achieve these objectives we welcome, because we have no particular pride of authorship line by line.

And some of the studies that you people have made that you are talking about are going to be things of importance. I for one happen to handle as you know the appropriations for the Cancer Institute. And if there is anything exciting that has happened in the past 5 or 6 years, it is the research on the connection between viruses and cancer.

Now then you say where do they come from? Maybe they come from water. Some of them. And maybe they don't occur right away. Might be later on. I am convinced there is some connection, so are the scientists.

So we have to look everyplace where a virus is going to get into a human body. And drinking water, if it is not taken care of right, with modern research which they have, why, that is where it could happen. That is where it could happen.

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That is one field I know a little bit about and have been exposed to. And you are right about it, most people are only aware if it tastes all right—if they are thirsty enough they just say it is all right, but it may not be.

But this is a field in which I am convinced there is going to be some connection sometime.

Mr. NADER. I certainly agree with your expression, Senator Magnuson. I might suggest that as paradoxical as it might seem, the soft drink manufacturers and processors might well have information of use to this committee. I say this because they apparently have made market studies indicating that the market for soft drinks is very bullish in part because of growing public concern over contaminated drinking water and they estimate that the consumption of soft drinks have exceeded milk a few years ago, having exceeded coffee 2 years ago, will exceed drinking water by 1976.

Now this may be a rather parasitic way for that industry to look at a public health problem, but I would submit that they may have information about their tests of drinking water which they have not made public that could be of considerable use to this committee.

If they are not asked to testify, perhaps a few questions can be put to Coca Cola, Pepsi Cola and other companies, that they might want to answer in the public interest.

The recommendations largely deal with section 4 of the bill. And I won't read them because they are apparent, but simply summarize that there should be performance standards which reflect the best available technology as determined by the administrator of the act.

This phrase "best available technology" is now being applied to the control of corporate pollution. And if it is going to be applied to control of corporate pollution, it is even perhaps a stronger case for immediately applying it to the drinking water technology, much of which is aged, or if new, not comprehensive enough.

Also there needs to be an amendment, section 4(c)(2) dealing with the information and data on the best available technology. After the last sentence of section 4(c)(2) should be added the following: "This information and data should serve as minimal guidelines or standards for the design, operation of water supply systems. "Each State should have the option of amending or adding to these guidelines to affect as you mentioned earlier, Senator Magnuson, local conditions but to be subject to approval by the administration under section——

The CHAIRMAN. You are speaking there of upgrading?

Mr. NADER. Yes.

The CHAIRMAN. Beyond the minimum Federal levels?

Mr. NADER. Right.

The CHAIRMAN. In other words, if they want to do that to meet the local conditions that should be encouraged.

Mr. NADER. Exactly.

The CHAIRMAN. All right.

Mr. NADER. Because there are some problems that are much more acute in some areas than in other areas. For example, in some parts of California, the nitrate level and sodium level in the water are exceptionally high. There needs also to be more public information.

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There is an operating assumption in the water works establishment that you don't want to tell the public about the conditions because it will unduly alarm the public; well, if it does not duly alarm the public the public is not going to be alarmed at all.

The issue is not to unduly alarm them. The issue is to inform them so they can be concerned in order to support elected and appointed officials' efforts to improve this situation.

After all, if they are drinking the water they should be told what the situation is. And we recommend that under section 5 each public water supply system be required to immediately notify the State, the administrative and the public when a violation of the primary drinking water standards has occurred.

And that each public water supply system be required to prepare an annual report made available to the public which describes the year's activities and the frequency of violations of the drinking water standards and the potential hazards to health resulting from these violations as well as many other points to be recorded.

The CHAIRMAN. Well now, let's take the Seattle Water Department. They make an annual report, I am sure, to the city council. And the city council just looks at it. There is generally no hearing held about whether they have done anything to upgrade or what the problem is, things of that kind.

And that is why the public awareness of this should require that when all these water systems come in, they should be quizzed about what they have done, or should inform the people what has to be done to do something about it.

That is important, too. So if they need a bond issue to upgrade their system the public will be aware. And I am sure the public will be receptive to that. You point out here in part of your testimony that the experiment in West Virginia I believe would add 50 cents a year. Is that correct?

Dr. HARRIS. Yes.

The CHAIRMAN. 50 cents a year for better treatment. And I think that the lack of public awareness that this is very important is the thing that has got to be watched all the time, just like traffic laws or anything else.

And there has not been any public awareness of this.

Dr. HARRIS. This is probably exemplified best, I believe, in Cleveland, Ohio, which it is one city we have visited during a study that is now in its final stages.

The Cleveland, Ohio, system in comparison to all the other systems we visited is generally in a more abysmal state of decay.

I think that the reasons for this are apparent. Most importantly the public really has not been confronted with just exactly how bad and to what extent repairs are needed in their system. This neglect has already led to some disasters there and the possibility for even greater disaster increases each day in the Cleveland system.

Mr. NADER. We also favor an amendment which provides for dual Federal-State procedure modeled after section 309 of the Federal Water Pollution Control Act, and references should be omitted to "unreasonably" or "unreasonable endangerment to public health,"

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which provide enormous areas of discretion, unbridled discretion in my judgment, for the administrators of the system.

These findings only serve to delay and obfuscate the enforcement process. They are escape clauses, in effect.

The CHAIRMAN. Well, now, you say:

Under section 5, enforcement should be a dual Federal-State procedure; modeled after section 309 of the Federal Water Pollution Control Act.

And go on further and suggest that:

The Administrator should have the option of prosecuting directly a violator, or of notifying the State to do so within 30 days.

And if the State doesn't take action, he would be free to take action directly; is that correct?

Dr. HARRIS. Yes.

The CHAIRMAN. That is what you mean by dual enforcement?

Dr. HARRIS. Yes, sir.

Mr. NADER. In section 6, "imminent hazard" should be defined more clearly. The difference between a violation of the drinking water standard and a "serious risk to health" should be clarified so that the Administrator can move immediately for injunction in the use of a particular water supply in the face of a violation.

There should be an effort to better link drinking water regulation with control of contaminants at the source. Polluters should pay the cost of water treatment caused by their pollution and a "cause of action" should be provided so that water supply systems can move against polluters of the water supply. Citizens should not be required to pay twice for pollution—once for abatement and then again for removal of the contaminant at the drinking water treatment plant.

Perhaps another way of putting this is that water pollution prevention should become more synonymous with drinking water contamination prevention.

Thank you.

Senator HART. Thank you, Mr. Nader.

As the chairman said, we appreciate and will give serious consideration to the suggested changes in language that you have given us.

Doctor, you identified Cleveland. Mr. Nader has talked about New Orleans and Evansville, Ind. Maybe I had better separate them because in the case of Evansville, and the case of New Orleans, you have enumerated the substances which would alarm you in those waters, and you base it on an EPA study or you extract it from an EPA study.

When did the EPA do that study, if you can recall?

Dr. HARRIS. The report on Evansville, Ind., was published in the *Environmental Science and Technology*, which is listed in the references at the end of the testimony. This was published in 1972.

The Lower Mississippi study in New Orleans and surrounding areas was published in April of 1972, and that is the publication in the references, "Industrial Pollution of the Lower Mississippi River in Louisiana." There were reports prior to this on the Lower Mississippi, I might add.

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Senator HART. Senator Magnuson said we don't want to unduly alarm people, although we do want to attract their attention.

How would you counsel the people of New Orleans and Evansville? Would you warn them against drinking their water, or suggest the soft drink alternative? I mean, we are lay people. What should we understand you are telling us, if we live in those cities?

Mr. NADER. Before he answers that, Senator, we don't want to convey the impression that soft drinks are less contaminated.

I just want to convey the impression that soft drink manufacturers are trying to convey that impression.

It would be interesting to find out what additional activities they engage in, too, if any, to clean up the water before they apply their dyes and other juices and sugars to make soft drinks. I don't want to, please, convey that impression.

Senator HART. My question could have been understood to elicit your judgment as to which was the less desirable, but, in any event, what do you tell the people, if they live there?

Dr. HARRIS. Senator Hart, I should preface my remarks by saying that philosophically I believe that once you inform the public, not only of the possible hidden hazards but, of course, of the obvious hazards that are present, the public will better understand the issues and therefore be able to make decisions based on this information.

I believe I would advise city officials in New Orleans to be more open about the potential problems. However, I believe that they are of a different philosophy. They believe that you have to find people dying in the streets of toxic organic compounds before we are allowed to act. Instead what should be done is simply to notify people in such areas as to the results of such studies, what potentially they may mean, what is known and what is not known about the compounds in question, and particularly, what technology is available and at what cost to eliminate, to the best of our ability at the present time, these particular contaminants.

I believe that given that information, and given that choice, the public, in this case, in New Orleans, perhaps in Cincinnati, and Evansville, Ind., would vote overwhelmingly to install this technology or to curb the pollution. I believe that, as in the case of Nitro, W. Va., where the cost of the best technology available at that time resulted in a cost of about 50 cents per person per year, the community would elect to install that technology.

The CHAIRMAN. That is the 50 cents that I talked about.

Dr. HARRIS. Yes, sir. To eliminate about 90 percent of the organics. This is not as good as we could do, but it is a substantial improvement in my opinion in the quality of water in this community. I believe that there are systematic attempts implicit or explicit in our present system to keep such information from citizens.

In questioning Cleveland, in questioning other localities for example, in Pittsburgh, which were taking water from a source which is grossly polluted with industrial waste, the response to questions such as, how much would it cost or have you done studies to show how much it would cost to make improvements by installing new technology, technology which you don't have, their answer was typically that it is too expensive.

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Probing further, asking, well, how much is it, we learned very quickly that they had never made the study. They had never actually sat down and determined what could be done, how much it would cost and then presented this information to the public so they could make a decision.

The CHAIRMAN. Yes, so that they won't find themselves being guinea pigs for something that they didn't need to be. They are sort of a laboratory.

Dr. HARRIS. One thing that must be remembered, the cost of treatment is a small percentage of the total cost of water to the consumer. The majority of the cost the consumer pays for water lies in administration and in the cost of the distribution system—the construction of pipelines and systems for delivering water to the consumer—so that if you even double the cost of treatment, you are maybe only adding, deepnding on what part of the country you are in, 10 percent to the home water bill.

Mr. NADER. One can hardly find an example where a smaller level of investment will have a higher public health payoff in the country.

The CHAIRMAN. And technology is getting better and better in this field, new methods——

Dr. HARRIS. Up to now there has been absolutely no incentives for industries who produce water treatment technology to continue research and development. I discussed this with Calgon Corp. for example, and they are completely demoralized by the whole water treatment industry. They are completely demoralized and I think that is a shame in itself.

The CHAIRMAN. Well, that could be, it is possible to have that treatment cheaper than the old treatments, if you get at it. You have got to make the initial start.

Dr. HARRIS. It is.

The CHAIRMAN. Let me ask this question, too.

Senator Hart and I and this committee, after a pretty long struggle, finally got a toxic substance bill passed. Now, I am hopeful that this will be helpful in many cases. It is really treatment at the end, isn't it?

Dr. HARRIS. Well, I think that both obviously are needed. The Delaney amendment, for example, which specifically disallows the addition of a carcinogen to food is analogous here.

To allow chemical manufacturing companies to discharge carcinogens into drinking water really violates the Delaney amendment in many cases. That there is non-point source runoff and, of course, the always present potential for a toxic spill must also be considered in changing our technological outlook. We must not only prevent the direct discharge of toxic substances but also guard against inadvertent contamination.

The CHAIRMAN. Water treatment, when it gets to some phases, I suppose, is going to pose a complex problem. There will be some water that will have more minerals in it than other water systems, and sometimes some very good doctors will tell you to go someplace where you can get a lot of minerals in the water. But generally, that is not true. The mineral content can be down to a general level. We talk about the mineral water in the spas, and all those places, but I

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am more concerned with these contaminations that are going to cause infection and these other things that go along with it.

That is a real deep problem, but I thoroughly agree with you that there has been a complete lack of awareness, and there has been a lack of local officials, in many cases, to make the public aware—because when they do, they know they are up against the fact that they are going to have to ask for some money to do the job, and they don't want to face up to that. They will let the systems go.

We have been a long time getting this started from the days when they had about 12 people down there trying to do the whole thing for the United States. It is getting late, and we thank you both very much and appreciate your contribution to this hearing.

Mr. NADER. Thank you very much.

[The statement follows:]

STATEMENT OF RALPH NADER

Mr. Chairman, and distinguished members of the Subcommittee on the Environment, thank you for the invitation to comment on S. 433, the "Safe Drinking Water Act of 1973." With me today is Dr. Robert H. Harris, Assistant Professor of Environmental Engineering, University of Maryland. Dr. Harris has been working with me for the past year on the problems of drinking water quality.

Inadequacies documented by the Community Water Supply Study of 1969 (Bureau of Water Hygiene, U.S. Department of Health, Education, and Welfare) come at a time when Federal appropriations for research, surveillance and funding of improvement projects continue to be grossly inadequate; when we are becoming increasingly aware of the detrimental effects of chronic exposure to trace contaminants, contaminants which are normally not removed by existing water treatment practices even under the best of conditions; and when the pollution of surface and ground waters is still on the increase. The fact that the presence of viruses and recalcitrant toxic organic compounds have been repeatedly demonstrated in drinking water that has received "complete" treatment should be cause in itself for alarm, even if gross inadequacies in the expected performance of so-called water "purification" plants had not been demonstrated by the Community Water Supply Study.

It is not difficult to appreciate why these recalcitrant contaminants escape the purification process—current technology relies almost exclusively upon innovations of the latter 19th and early 20th centuries when treatment strategy focused on the need to remove bacterial pathogens. In a recent comparison of current and past water treatment practices, Professors J. E. Singley and A. P. Black noted, despite the advances in the electrical and mechanical controls in treatment plants that:

Approaching the treatment units however, the calendar rolls back 50 years and one is faced with the melancholy fact that water treatment is still an art and not a science. One sees before him the same old mixing basins, flocculators, and sedimentation basins that have served as treatment units for more than 5 decades . . . the engineer has been slow to realize that many new advances in treatment methods or materials are at his disposal. The conservatism in the design of water treatment units is also caused by the fact that, in many cases, engineers are required by regulatory agencies to follow arbitrary design criteria, some of which have been obsolete for many years.

It is these latter points—the lethargy of engineers in accepting new technologies and the restrictive design criteria issued by state regulatory agencies—that are at the heart of an out-moded strategy for purifying drinking water. This alarming state-of-affairs is only underscored when it is considered that the present 1962 Public Health Service Drinking Water Standards (DWS) as well as the proposed 1971 revised DWS does not mention viruses and deals inadequately with toxic organics.

TOXIC ORGANIC COMPOUNDS

The manufacture of synthetic organic chemicals, which currently number about 12,000, has been increasing at the rate of about 500 each year. Although

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over half the population in the United States receives its drinking water from surface water supplies, most of which are contaminated by organic waste, little is known about the effects of ingesting these organics for long periods of time.

One of the few studies on the physiological effects of organic fractions in treated drinking water was conducted by W. C. Heuper and W. W. Payne on the water supply of Nitro, West Virginia, on the Kanawha River. By demonstrating the carcinogenic (cancer causing) and life-shortening properties of these organic fractions, they seemed justified in suggesting

* * * that comprehensive chemical, experimental, and epidemiologic studies for ascertaining valid information must be undertaken in order to forestall a possible future development of a potentially catastrophic cancer epidemic among the general population of communities or regions exposed to carcinogens from such sources.

J. B. Andelman and M. J. Suess, writing in the Bulletin of the World Health Organization, sounded a similar alarm, concluding that:

When one considers that animal experiments have shown that repeated exposure to carcinogens is more effective than an equivalent single dose, one should not neglect the possibility of cancer from the repeated life-long exposure to carcinogens in air, food and water.

During their studies, Andelman and Suess observed that polynuclear aromatic hydrocarbons (PAH), which include many potent carcinogens (e.g., 3,4-benzpyrene) have been repeatedly identified in treated drinking water. Observing that there are no "safe" levels for chemical carcinogens, they strongly recommended that attention be given to reducing as far as practicable the amounts of carcinogenic PAH in drinking water.

Recently, two independent regional laboratories of the Environmental Protection Agency (EPA) have isolated and identified toxic organic compounds in the treated drinking water supplied from the lower Mississippi River and in Evansville, Indiana. The lower Mississippi River, affectionately known as the "colon of America," happens to be the source of drinking water for more than half of all the people in the State of Louisiana. Sampling from the tap water at the U.S. Public Health Service Hospital at Carville and at the Carrollton Purification Plant in New Orleans, the EPA laboratory identified as many as 40 synthetic organic compounds. Six of these compounds have been shown to induce histopathological changes in animals in chronic toxicity studies, and three of these compounds have been shown to be carcinogenic. However, chronic toxicity data are not available for most of these compounds, and the report warns that there may be a myriad of organic chemicals not yet isolated and identified. After these findings, perhaps it is not surprising that New Orleans has been reported to rank third highest of 163 metropolitan areas for incidence of kidney cancer, sixth highest for cancer of the bladder and urinary organs, ninth highest for cancer of unspecified digestive organs, and has 2.6 times the national average incidence of tongue cancer fatalities and 3.5 times the national average incidence of cancer of other parts of the mouth.

In Evansville, Indiana, over 40 organic compounds were detected and 13 were isolated and identified from the treated tap water supplied by the Ohio River. Several of these compounds have been shown to be acutely toxic and/or carcinogenic. Two of the compounds present in highest concentration are acutely toxic and one is carcinogenic. Both were traced to a chemical manufacturing plant 150 miles upstream.

Further upstream, in the EPA's National Environmental Research Center (NERC) at Cincinnati, R. G. Tardiff and M. Deinzer have recently demonstrated the toxicity of the organics isolated from the tap water in Cincinnati, as well as providing further evidence of the toxicity of some 60 organic compounds identified by others as present in treated drinking water at one place or another. Most of the compounds demonstrated depression of the central nervous system and pathological lesions of the liver and kidneys in animal experiments. Only one compound was "non-toxic" in acute toxicity testing.

Evidence that ground water supplies are subject to similar organic chemical contamination has recently been documented by A. D. Burnham and co-workers. For well water in Ames, Iowa, they were able to isolate and identify 14 potentially toxic organic compounds. The source of the contamination was believed to be the residues from a coal gas plant in Ames during the 1920s.

Although there have been attempts to establish a relationship between quality of drinking water and cancer mortalities in England, the Netherlands, and

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Switzerland, the evidence is inconclusive. Nonetheless, as far back as 1964, a World Health Organization Committee on the Prevention of Cancer recommended that:

Effective measures are needed to prevent the introduction of carcinogenic industrial wastes into the atmosphere and into public waters serving as sources of drinking water supply. * * * Although at present no clear evidence exists that such carcinogenic industrial contaminants of air and water have become an actual environmental cancer hazard to the general population, they should be viewed with serious concern, so as to forestall such complications in the future.

Consequently, the W.H.O. European Standards for Drinking Water, while not based on toxicological or epidemiological data, suggest limits for chloroform-extractable organic matter as well as specific limits on six polycyclic aromatic hydrocarbons, three of which are known to be carcinogenic. In 1970, the USSR responded by placing limits on the concentration of 294 toxic substances (most of which are organic compounds) allowable in water courses used as a supply of drinking water.

In light of these findings and the response by other countries, the action by this country as embodied in the 1962 DWS as well as the proposed 1971 revisions is appalling. Although the 1971 revisions propose standards on certain pesticides, the remaining thousands of organic compounds are covered under two collective parameters (Carbon Chloroform Extract, CCE; and Carbon Alcohol Extract, CAE) which are arbitrary, have no toxicological basis and do not even reflect state-of-the-art technology for removing organic chemicals. That improved technology exists cannot be disputed. For example, granular carbon filters have been employed since the 1930s in the food and beverage industry to rid water of objectionable organic compounds. Dr. Gordon Robeck and co-workers at the NERC have demonstrated the efficiency of activated carbon for removal of several toxic pesticides as well as a wide range of synthetic organic compounds. In the studies of J. B. Andelman and M. J. Suess, while observing that ozone and chlorine dioxide were effective in removing carcinogenic PAH, they concluded that, ". . . filtration through activated carbon is the most effective conventional process for the removal of PAH." Recently the NERC has documented the efficacy of granular activated carbon filters that were installed several years ago in Nitro, West Virginia. The cost of this process has been estimated to add $0.50 per person *per year* to the home water bill, hardly an economic liability to the consumer.

Although it is true that monitoring for specific organic compounds would be laborious, expensive, and nearly impossible at present, there is no reason why standards should not reflect the best available technology for elimination of these toxic substances. That out of an estimated 12,000 public water systems receiving polluted surface water, only approximately 35 have installed such technology seems to suggest that guidelines for the setting of standards and a "technology transfer" program should be an important feature of pending legislation.

ENTERIC VIRUSES

There is little question that there are high concentrations of viruses in sewage effluents unless sophisticated advanced waste treatment processes are employed. Enteric viruses isolated from river water have been identified as those that cause poliomyelitis, aseptic meningitis, hepatitis, and many other respiratory and gastrointestinal diseases. Some of these same viruses have been implicated in other more serious illnesses and the possibility of tumor production by these enteroviruses has not been ruled out.

It has long been known that viruses are more resistant to the destructive forces of nature than bacterial pathogens. Results from the research of E. W. Akin and co-workers have shown that some enteric viruses survive well over 100 days, even in heavily polluted river water. That standard water treatment practice may be incapable of efficient removal of viruses has been suggested by results indicating the presence of enteric viruses in treated drinking water in Israel, Paris, France, and in Lawrence and Billerica, Massachusetts.

Despite the dangers of viral contamination of drinking water, most waterworks engineers believe that it is currently impractical to monitor for viruses, and for this reason there will be no standard for viruses in the revised DWS. Of course, it is true that the coliform index, while an acceptable laboratory

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tool for pathogenic bacteria, is not a reliable index for viruses since viruses have been shown to survive longer than coliform bacteria. However, some authorities, such as J. C. Morris, E. E. Geldreich and N. A. Clarke have suggested more effective procedures than the coliform index for monitoring viruses, procedures that they say could easily be adapted to current laboratory capabilities. Others, such as Dr. J. L. Melnick of Baylor College of Medicine, a noted authority on viruses, believe that direct monitoring is now feasible. Melnick concludes that:

Methods are now available to detect small amounts of virus in large volumes of water. These viruses are pathogens; they can make people sick and they can sometimes kill. There is reason to suspect that some viruses may produce diseases years after the initial infecting event. I feel that the time has now come to use our new methods . . . to allow us to set up minimum standards of virus pollution, at a level . . . no more than one detectable infectious virus unit per 100 gal. of water used for drinking and food preparation. This is a practical level to aim at. The cost for monitoring would not be excessive, and the rewards might be high.

Even assuming for the moment that effective and inexpensive monitoring techniques for viruses in drinking water are currently unavailable, there is still no reason why a virus standard cannot be reflected in performance standards for the design and/or operation of water purification facilities. In fact, this is precisely what Montgomery County, Maryland, is doing right now to control the release of viruses from advanced waste treatment plants. By resolution of the County Council, standards have been adopted and guidelines are being promulgated outlining the various treatment methodologies that will insure meeting a standard of one detectable infectious virus unit per 10 gal. of effluent. Secondary standards, such as turbidity, BOD, ammonia, pH, and disinfectant concentration and contact time, will provide the means by which the primary standard for viruses in effluents can be assured even if they are not measured directly. In effect, these secondary standards are a surrogate for direct viral standards, analogous to the use of coliforms as a surrogate for bacterial pathogens.

Dr. J. C. Morris, an expert on disinfection from Harvard University, has suggested a similar strategy for removal of viruses in drinking water. Apparently, Sweden has adopted such a strategy for drinking water, basing their standards for disinfection on the recommendations of the Royal Medical Commission.

However, regardless of the strategy, there seems little question that current technology is capable of better assurances that viruses are absent from drinking water. Both Dr. Gerald Berg at the EPA National Environmental Research Center in Cincinnati and Dr. Otis Sproul at the University of Maine, leading authorities on viruses in water, have recently reviewed the literature on the efficiency of virus removal by water treatment processes. Both agree that all processes reduce the concentrations of viruses to some degree, thereby constituting adjunctive removal, but that more efficient removal could be realized by more diligent operational control and by design of new units with maximal removal of viruses as a dominant strategy. Further support of these conclusions was provided by Dr. John T. Cookson of the University of Maryland in his report to the Montgomery County Council.

DISINCENTIVES TO THE USE OF IMPROVED TECHNOLOGIES

In light of the realization that existing technology is capable of substantial removal of toxic organics and viruses, one might ask then why this technology is not being used. To be certain there is a widespread attitude in the water works fraternity that "what you can't see won't hurt you." Others operate on the philosophy that a contaminant must be proven harmful before action is required. Somehow, they are able to reconcile the fact that the public becomes the "guinea pig" in this environmental version of Russian roulette.

But perhaps a more serious obstacle is complete lack of responsiveness of the state and local regulatory agencies. This is particularly reflected in the state guidelines and standards for the design and operation of water purification plants. For example, consider the guidelines from three states—Pennsylvania, Wisconsin, and Missouri (Wisconsin has adopted the guidelines formulated by the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers):

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(1) Specific reference is not made in any of the guidelines to viruses, toxic organics or heavy metals.

(2) For the design of disinfection units, which can be used to most effectively assure elimination of viruses, Missouri explicitly disallows the use of disinfectants other than chlorine, while Pennsylvania and Wisconsin do so implicitly. This seems particularly debilitating when it is considered that ozone is a considerably stronger virucide than chlorine.

(3) Although a potentially practicable and economic method of organic removal is to replace sand in sand filters with granular activated carbon as is done in Nitro, West Virginia, the Wisconsin standards make the use of sand mandatory, specifically disallowing the use of granular activated carbon. Similar requirements are mandated by the Pennsylvania and Missouri standards.

Although the intent of the regulatory agencies is, in the words of the Missouri guidelines, "* * * to encourage, rather than to obstruct the development of new processes and equipment * * *," the result seems to have been just the opposite.

RECOMMENDATIONS FOR IMPROVED LEGISLATION

From the above discussion, it is evident that although numerical standards for certain contaminants may have little basis in toxicological or epidemiological knowledge and monitoring problems may be insurmountable, the desirability for the absence of these contaminants is clear. Requirements for their control should be based on operational and/or technological standards. It is hoped that, for the case of toxic organics and viruses that the Committee will better focus on the need for their absence from drinking water. Based on these concerns and others, the following recommendations are offered by way of strengthening the proposed Senate bill, S. 433:

(1) Sec. 4(b)(1)(C) should be amended to read as follows: "shall include performance standards for adequate design, operation, maintenance, surveillance and monitoring of public water supply systems to assure a drinking water quality which meets the requirements of (A). Such performance standards shall reflect the application of the best available technology as determined by the Administrator under Subparagraph (c)(2) and (c)(3) of this section and shall apply to all contaminants which may exist in any public water supply system in the United States which may cause or transmit disease, chemical poisoning or other impairments to man, including such contaminants for which reasonable monitoring techniques are not available."

(2) Sec. 4(c)(2) should be amended to read "information and data on the best available technology for the control of the * * *."

In addition, after the last sentence of Sec. 4(c)(2) should be added the following: "This information and data should serve as minimal guidelines or standards for the design and operation of water supply systems. Each state should have the option of amending or adding to these guidelines to reflect local conditions, but to be subject to approval by the Administrator under Sec. 11."

(3) Under Sec. 5, "Enforcement of Standards," each public water supply system should be required to immediately notify the State, the Administrator, and the public when a violation of the primary DWS has occurred. In addition, each public water supply system should be required to prepare an annual report, made available to the public, including but not limited to, its performance record for that year in comparison to previous years, the frequency of violations of the DWS, the potential health hazards resulting from these violations, the frequency and reasons for the interruptions in service, the cost of water in relation to the cost in other similar systems, the need for major repairs, and the inadequacy of existing treatment facilities. Provisions should be made allowing the opportunity for a public hearing on this annual report.

(4) Under Sec. 5, enforcement should be a dual federal-state procedure modeled after Sec. 309 of the Federal Water Pollution Control Act. The Administrator should have the option of prosecuting directly a violator or of notifying the state to do so within 30 days. Dual enforcement is absolutely necessary in order to insure that violators are dealt with in the most efficient and timely manner.

(5) References to "unreasonably" and "unreasonable endangerment to public health" should be struck from Sec. 4 and Sec. 5. Such findings only serve to delay and obfuscate the enforcement process. Each violation of the primary DWS should be reason enough to set in motion the enforcement procedure. Each violation should require an order of compliance from either the Adminis-

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trator or the State with the option of prosecution if abatement is not undertaken immediately. In other words, the water supply should be considered "dangerous" upon violation of a DWS and no further showing of danger should be required before enforcement can take place. Escape clauses place additional restraints on citizen suits as well, because citizens would have the burden of showing "unreasonable" danger as opposed to mere violation of the primary DWS.

(7) In Sec. 6, "imminent hazard" should be defined more clearly. The difference between a violation of the DWS and a "serious risk to health" should be clarified so that the Administrator can move immediately for injunction in the use of a particular water supply in the face of a violation.

(8) There should be an effort to better link drinking water regulation with control of contaminants at the source (FWPCA). Polluters should pay the cost of water treatment caused by their pollution and a "cause of action" should be provided so that water supply systems can move against polluters of the water supply. Citizens should not be required to pay twice for pollution—once for abatement and then again for removal of the contaminant at the drinking water treatment plant.

Thank you.

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The CHAIRMAN. We will recess until 1:30 for the benefit of the others.

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AFTERNOON SESSION

Senator STEVENS [presiding]. Mr. Fri, we are ready to proceed. Proceed in any manner you wish. We are happy to have you here this afternoon.

STATEMENT OF HON. ROBERT W. FRI, ACTING ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY; ACCOMPANIED BY JAMES H. McDERMOTT, CHIEF, WATER SUPPLY PROGRAM

Mr. FRI. Thank you very much, Mr. Chairman.

I am accompanied by Mr. James H. McDermott who is the head of our water supply program for EPA.

I have a prepared statement which is relatively short. If it is all right with you, I will read it into the record.

Senator STEVENS. Very well.

Mr. FRI. Mr. Chairman, I am pleased to appear before this distinguished committee to testify in favor of the Administration's Safe Drinking Water Act of 1973, S. 1735.

You will recall that we appeared before this committee in March of 1972. At that time, although we had not submitted to you an administration bill, we indicated that our ongoing staff studies and investigations had identified several critical elements required in drinking water legislation, noting that the solution to identifying problems would not "In our opinion be effected by changing the roles of federal or state governments * * * but by assuring the enforcement of national standards and by strengthening State and local programs."

Our studies and investigations have now advanced to the stage where the President has proposed to the Congress the Safe Drinking Water Act of 1973.

The comprehensive program specified in our proposal is based in large measure on an evaluation of our experience with the interstate carrier water supply program, which has been implemented over the last 60 years by a local, State, Federal partnership involving definitive responsibilities for all levels of Government.

Further, the proposed bill has drawn heavily from our experience as reported in our community water supply study of 1970, and a series of State program evaluations that we have conducted since that time.

The Federal Government's program for protection of drinking water has traditionally been addressed to responsibility for preventing the spread of communicable diseases in interstate commerce, pursuant to the Public Health Service Act.

Under this Act EPA promulgates and assists in the enforcement of regulations which preclude interstate carriers from utilizing water from sources which have not complied with certain required drinking water standards.

This enforcement authority applies to about 650 out of an estimated 35,000 to 40,000 public water supply systems serving both large cities and small towns and applies only as such water is used by interstate carriers.

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Under that authority, drinking water standards have been established. These standards, last revised in 1962, contain limits concerning physical characteristics and chemical and biological constituents affecting the quality of the water.

The standards establish limits on levels of coliform bacteria, arsenic, cadmium, chromium, cyanide, lead, fluoride, selenium, and silver, which can clearly affect the health of the user.

Interstate carriers do not use water drawn from systems which do not meet these requirements until the deficiency is corrected.

In addition to these requirements, the standards recommend limits on certain physical characteristics and chemical constituents of drinking water which are primarily of aesthetic concern in that they import undesirable taste and odors to the water, cause discoloration of plumbing fixtures, and the like.

Although the jurisdiction of our existing program is limited to those water supply systems serving interstate carriers, most large cities and State do use our standards as their basis for regulating the quality of their drinking water supplies.

Notwithstanding the wide acceptance of these standards, the community water supply study, a field inspection and evaluation of 969 community water systems conducted in 1970 by our Water Supply Division, then in the Department of Health, Education, and Welfare, indicated that 5.4 percent of the population served by the 969 systems was being served drinking water that fails to meet one or more of the existing standards set by the Federal Government.

Extrapolating the results of this study to the Nation as a whole, we can estimate that some 8 million people served by some 5,000 systems receive water that fails to attain at least one of the Federal standards. In the majority of cases, these deficient systems are smaller systems serving smaller communities.

In relation to this, national health figures indicated that during the 10-year period from 1960–70, there were at least 128 known outbreaks of disease or poisoning attributed to drinking water.

Deficiencies among the Nation's drinking water supply systems and surveillance programs have been well documented during the previous hearings. Additional evidence, revealed since the March 1972 hearings, is contained in our evaluation of water supply systems and programs in three States.

This evidence confirms our findings in other States, much of which has already been presented to this committee.

These later evaluations indicate that in these three States where water supply systems were surveyed—

About 25 percent of the public water systems surveyed did not meet the bacteriological standards during one or more of the past 12 months;

About 50 percent of the systems did not meet bacteriological monitoring standards;

About 50 percent of the systems were judged to need additional treatment facilities; and

All these States studied were judged as needing to increase their water supply budget in order to provide an adequate program.

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We currently have evaluations under way or in the planning stages for nine other States.

I would like to emphasize, Mr. Chairman, that the State program evaluations to which I have just referred were initiated at the request of the States for technical assistance.

In addition to the information of national significance which we have gathered we have sought to make recommendations to solve immediate and potential local and State water supply problems.

I might add we have gotten quite good response from the State surveys.

Now, Mr. Chairman, given this body of experience, the administration has developed and has sent to the Congress a piece of legislation which we believe will provide an effective solution to the problem of providing safe drinking water for the public.

Senator STEVENS. Mr. Fri, if we can go off the record, we didn't hear the first vote buzzer, so I have just five minutes to make this vote. I will be back in just a few minutes.

Mr. FRI. All right.

[Recess.]

Senator STEVENS. Thank you for your consideration, Mr. Fri.

Mr. FRI. We were about to discuss the Safe Drinking Water Act which the administration has proposed. Let me pick up there.

Now, Mr. Chairman, given this body of experience, the administration has developed and has sent to the Congress a piece of legislation which we believe will provide an effective solution to the problem of providing safe drinking water for the public.

The legislation is premised on what we believe to be an essential identification of Federal, State, and local responsibilities. The major responsibilities for carrying out the day-to-day work to assure safe drinking water is properly at the local level.

The bill is also premised on the conviction that the public has the right to know the quality of its drinking water and that an informed public is the best guardian of its own health and safety. The bill would capitalize on that conviction by assuring maximum public notification of standards violations.

Under the President's bill the EPA Administrator would establish national primary drinking water standards. These would be addressed to all health-related limits for constituents of drinking water and would include requirements for monitoring and reporting of water quality.

We believe that the establishment of these primary standards should be a Federal responsibility. Standards for health protection do not vary with locality. It is the Federal Government which already has and can best bring together the most qualified pool of scientific and technical aspects involved. There is no point in obliging the States to duplicate this effort.

The EPA Administrator would also be authorized to issue recommended national secondary drinking water standards for adoption by State and local governments at their option.

These recommended standards would apply to constituents of drinking water which may affect matters such as the taste, odor, or appearance of drinking water, but is not a health hazard.

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I emphasize that these nonhealth-related standards would not be mandatory but would be a matter of state or local preference.

I would also like to emphasize another provision of the standard-setting authority.

When the Administrator issues primary or recommended secondary standards he is also required to publish, among other matters, information and data relating to the treatment, operation, maintenance, and construction of the water supply facilities.

While treatment, operation, maintenance and construction requirements are not made mandatory under the bill, information as to such must be published when standards are issued and would, therefore, be available for use by and guidance of suppliers of drinking water in their operations.

That information could also be readily converted into regulations by State and local governments.

This feature of the bill, while insuring that the health limits for constituents in drinking water are not exceeded, leaves it up to the State and local agencies to determine how they will control the related matters of treatment, operation, maintenance and construction to meet those standards.

Now, moving on to the enforcement aspects of the administration's bill, we believe the enforcement provisions will be highly effective, yet avoid cumbersome regulatory or judicial procedures and require little direct Federal involvement.

The bill provides that the States shall have primary enforcement authority with regard to the drinking water standards and that EPA will monitor activities of the States and public water supply systems only to the extent necessary to determine if there is an adequate program to enforce the primary standards.

Whenever the water delivered by a water supply system is not in compliance with the primary drinking water standards, the supplier of the water must notify its users, appropriate state agencies, and EPA of the noncompliance and the possible health effects of such noncompliance.

This provision, which I consider crucial to the administration bill, coupled with a citizen suit provision will, we believe, make enforcement actions by regulatory agencies largely unnecessary.

We believe that suppliers of drinking water, who in almost all cases charge for their product, could not withstand the public pressure if their customers have notice that they are receiving water not in compliance with mandatory health standards.

The possibility of a citizen suit provides an additional incentive to suppliers to maintain compliance with the standards.

As indicated earlier, EPA's enforcement authority is concentrated on areas where a Federal role can be most effective.

In the case of an imminent health hazard, EPA could bring an immediate enforcement action. That is clearly an area where direct and swift Federal action may be the best answer to the problem.

Federal enforcement could also be invoked where the supplier of water does not comply with the notification requirements, the monitoring and reporting requirements, or where there is a refusal to permit entry and inspection of facilities.

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Since the approach taken in this bill either stands or falls on an effective public notification system, we feel it necessary to emphasize the importance of monitoring, reporting and notification requirements upon which a public notification system rests.

We would, as I have said, therefore make these requirements the subject of Federal enforcement.

The Federal enforcement authority includes both civil and criminal penalties and injunctive relief.

Perhaps of greater enforcement significance is the provision for citizen suits.

The President's bill has a broad authority for the conduct of research, studies, and investigations, and for financial, technical and other assistance to be made available to appropriate agencies, institutions and individuals with regard to these activities.

We believe that this authority is necessary to continue to provide the best scientific base necessary for the establishment of standards and the provision of information and advice to States and localities.

Mr. Chairman, I turn now to S. 433, safe drinking water legislation, which has the same objective as the President's bill.

We are, of course, in accord with the objective of S. 433 and with many of its specific provisions. But I want to comment on several of its provisions with which we differ in the approach taken.

With regard to the scope of the mandatory primary drinking water standards for health, S. 433 is considerably broader than the administration's bill.

Standards under S. 433 include, in addition to limits on constituents of water, operation and maintenance requirements.

As I indicated to you in describing S. 1735, the administration's bill, that while operation and maintenance standards are useful to insure safe and adequate water supplies, we recommend that such standards be left to State and local determination.

Variances in the character of treatment systems around the country make mandatory Federal standards for operation and maintenance inappropriate.

Variances may exist due to such factors as climate, hydrology, geography, demographic patterns, institutional structures and financing mechanisms.

We firmly believe that the Federal publication of operation and maintenance guidelines, rather than mandatory uniform standards, for adoption by State and local agencies would be the most effective and efficient use of resources.

We also prefer the enforcement provisions of S. 1735 to those in S. 433.

Under S. 433, if the primary standards are not being complied with and after a period of notification if appropriate action is not being taken, the Administrator must take steps to enforce the primary standards.

Under the approach we outlined in the administration bill, violation of water constituent health standards triggers the notification requirements as well as State and citizen enforcement.

We believe a system based upon the consumers getting the facts about their drinking water can work more quickly, smoothly and

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effectively. We, therefore, see no reason to invoke the more extensive Federal enforcement authority set out under S. 433.

We also recommend against enactment of the State program grant provisions of S. 433.

We believe that the safe drinking water program as contemplated by either of these bills will stimulate State and local interest and desire to improve State and local funding of such programs.

The costs of treatment, testing, and monitoring can and should be derived from the users of the water supply. We believe that an adequate safe drinking water program can and should be funded from State and local sources.

Mr. Chairman, for the reasons I have outlined, we recommend enactment of the administration's Safe Drinking Water Act.

We appreciate the interest and leadership this committee has shown to this legislation during the last Congress and the early attention you are giving it in the 93d Congress.

My staff and I will be pleased to work with your committee on this important legislation.

I will be pleased to respond to any questions you may have.

Senator STEVENS. Thank you very much.

I understand that the committee has made a request from EPA for an analysis of what the amendment that I added to the bill last year would mean. The amendment provides that no State would receive less than 1 percent of the funds involved.

Have you taken a position on that amendment yet?

Mr. FRI. Yes, we have. We have some detailed numbers which I believe are on their way up to you, Mr. Chairman.

Our position on that amendment, first of all, of course, is that we do not believe that State program grants are a desirable feature of the bill. If there were State program grants in the bill then we have no particular objection to the 1 percent requirement, provided it is not an altogether inflexible requirement.

We have had a good deal of experience handing out State program grants under our air and water programs with a variety of different needs and using various concepts and formula, and while I recognize the equity in the amendment that has been suggested, there are times when you are really overfunding what a State truly needs to have in order to run its program with a 1 percent rule.

Senator STEVENS. I understand that. We tried to provide flexibility in the amendment last Congress. It appears to us, if there are to be State grants, the costs to the individual States to maintain the type of programs that you believe should be a matter of State and local determination, and which should be funded by State and local funds, would be about the same without regard to the size of the State, or its population. If a State sets up monitoring programs such as you have described, it is going to cost about the same amount to provide those programs, regardless of regard to population. is this not so?

Mr. FRI. Well, we have tried to gather some data from the States early this year as to the cost of running a State program on a per system cost, isn't it?

Mr. MCDERMOTT. Yes—Per system cost.

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Mr. FRI. Per system cost runs from around $200 in some of the smaller States to up to $2,000 a system in New York, which I believe is the one with an estimate that high.

Now, we have also had some experience with the variation one gets in asking States for estimates of cost without any really strict groundrules.

Senator STEVENS. I hope you won't get tied to some of the responses you are going to get in my State, for instance, we have not had this obligation as yet. The cost differential for testing systems in Adak in the Aleutian chain, which, in case you don't know, is out in the Aleutian chain, or in Point Barrow, or down in Ketchikan, is equivalent to the difference between testing systems in San Francisco, Detroit, and Jacksonville or New Orleans.

When the Government deals with variations in such administrative costs, I think all too often the administration looks at the personnel costs and normal communications costs. It does not look at the impact of transportation, that is cost of travel necessary to have an effective enforcement program.

That is why I moved for that 1 percent floor last year. I don't think Alaska could do it even with 1 percent.

Mr. FRI. We did try in this survey to break down the components of the program and I give you that variation, a 10-fold variation not because I necessarily believe that is right but because I suspect when one went in and shook down the estimates they would come closer together.

But I don't think it would come down to an absolutely even, identical per system cost in every State. There are significant variations. In your State you have certain special problems, in other States they have different kinds of problems.

And while as I say in response to your earlier question with regard to the 1 percent rule—I think I understand the objective and the equity behind it, we do run into cases which I think would in part require us to deviate for good cause but if there is adequate flexibility, it would probably not cause us an undue administrative burden.

Of course given our position on State grants, that is a somewhat hypothetical response.

Senator STEVENS. Well, it is perhaps a small matter as far as the total program is concerned. But if the Congress gave all Senators the same amount of money to travel, it would cost my colleague from Maryland, $6, but it costs me $600 to go home.

Now that is the principle we are looking for. You must look into what makes up the administrative costs in each State and not just say that each State gets a hundred thousand dollars. It is just not appropriate in these circumstances.

We were putting a floor of not less than 1 percent into the bill. It may be that a state has to have more. But we also have given you some discretion in that decision. Tell me, why did you include in the air and water pollution control programs provisions for State grants but not include them in your safe drinking water bill?

Mr. FRI. Well, I think we have a fundamentally different situation in water supply in the water supply business, you have typi-

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cally a local utility supplying a product for which it charges that has a direct and immediate bearing on public health.

Now is the air pollution case, you have a situation where you don't have an agency supplying air pollution. Although air pollution does have an effect on public health, the agency that does it is really in a sense removed from your home; it is not connected to your home by a water pipe. The water pollution control program is connected to your home in part by a water pipe and a sewage pipe, although it deals substantially with industry as well.

But it is not in the typical case supplying a service that has an immediate impact on public health. It certainly has public health implications. I would argue from a conceptual point of view that there is little to be gained, except the stimulation of the local programs, by handing out program grants in air and water. And I think that is a value in air and water.

But in water supply we have got the situation where you do have a supplier supplying a product directly to you that affects the health of you and your family, and a failure to meet drinking water standards would have a much more immediate impact on public opinion, particularly with the notification provisions we have suggested in the administration's bill.

And therefore, I think the stimulus to adequate funding of public drinking water supplies is going to be much higher than we have in the air and water pollution case. And our experience in these State surveys that we have conducted, having now finished four—with several more underway—would tend to bear that out.

We have, as I mentioned in my testimony, in every case determined that the water supply program is underfunded. In all but one of those cases there has resulted, without great fanfare or publicity, in an immediate increase in the funding and staffing of the water supply programs in the States we have surveyed. And in one case where it was not immediate, it is coming around. They didn't believe our recommendations the first time, they had them checked by an independent unit, which agreed with us, and now that situation has undergone change.

So in summary I would argue that there is much more immediacy now in the water supply case, much greater weight in public opinion which will stimulate funding and we have actually seen that borne out in cases where we have made these studies. I don't think we need to supply Federal funds for the purpose of stimulating programs.

Senator STEVENS. My understanding is that EPA has done considerable research on the number of outbreaks of illness. You mentioned that in your statement.

Mr. FRI. Yes.

Senator STEVENS. What are the results of the studies?

Are there any indications of trends you can show from illness caused by water?

Mr. FRI. I should probably let Mr. McDermott reply to this. I will give a preliminary answer though. We have examined the statistics of known water borne disease outbreaks over the past decade or so. They are highly erratic. We will go along for a year or two without many cases; then you will have a great big case like the Riverside case which will run the numbers up.

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I understand that the most recent average is a little higher than the long term average, but I don't really consider that a trend for two reasons. One is that the whole thing is so erratic and random that it is a little hard to analyze. The second is that it may very well be a reporting phenomenon.

We are not at all sure that we were getting all the reports on disease outbreaks—water borne disease outbreaks—in the past. There seems to be somewhat less stigma attached to reporting these now. If there is a slow rise in the reported incidence it may very well be because people are reporting more of the incidents that have been occurring all along.

So I don't think that there is a strong and discernible trend that you can really rely on. The situation is not critical. What worries me is that we do see a number of standard violations and we are just asking for trouble, and we would like to get in front of that problem.

Jim, do you want to add anything to that?

Senator STEVENS. What about the reporting? Has it resulted at all in increased accuracy in reporting in such instances?

Mr. FRI. I am sorry I didn't hear the first part of your statement, Mr. Chairman.

Senator STEVENS. Does the higher intensity give you greater indication of illness than you have had before?

Mr. FRI. Well, I think there are more reports and we may be seeing a slightly higher level of reporting. Whether that means that there are actually more outbreaks or not is, as I understand it, quite debatable because we were not at all confident that we were getting anything like all of the outbreaks reported in the last decade or so.

Senator STEVENS. Did you want to make a comment?

Mr. MCDERMOTT. Perhaps I could cite a few numbers that might serve as an example of what Mr. Fri has been speaking to.

During the decade 1961 through 1970, that ten year period, there were the 128 to 130 outbreaks specified as reported by one level of government to another.

Now that averages out at approximately one outbreak per month. Within the last 2 years, preliminary statistics indicate that the outbreak rate is up to something like two outbreaks per month.

As Mr. Fri has noted, we do not view this as a major shift, a 100-percent change, in the rate of outbreaks, because in our studies and reports, some of which were alluded to in this morning's testimony, we have pointed out that the one per month rate in the 1960's did probably reflect an under-reporting phenomenon. Now with respect to the last several years I believe the activity and interest expressed in Congress, the EPA studies and investigations, and the like, have perhaps somewhat relieved local jurisdictions of the stigma of identifying that they have a problem with a view to seeking corrective action.

Another point: Throughout this entire period of time it would appear that if we look at the question of conventional community water supply systems as that term is generally used, there are approximately 3 to 6 outbreaks per year of that type.

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On the other hand, and both the administration's bill and your bill relates to this question, the remaining outbreaks that occur each year generally occur in what are referred to as semipublic systems, those that are not necessarily serving a community, but which are serving smaller types of situations: the restaurants, the motels, rest stops, recreational areas, that type of situation.

Senator STEVENS. Your proposal is a burden on the local governments; that is the unfortunate part about it. For the bulk of those situations, those will be the ones that will not be met by your proposal. These are the truck stops, local semipublic small concerns. There will be no involvement of Federal agencies in those situations, will there?

Mr. MCDERMOTT. Under existing statutory authority, most States do have the current responsibility for administering programs covering all of these situations at the present time, sir. As Mr. Fri has noted, we believe that the further identification of Federal standards, with the specific responsibility resting at the State level for implementing these standards, aided by the public notification and citizen suits provisions, will mean that the local citizen will become more aware of what is going on and, hopefully, not only support the local institutions and county institutions, but also the State programs through the State legislatures, so that the government responsibility will be supported as well as the utility responsibilities.

Senator STEVENS. But it seems to me that you have an inconsistency. You say that you believe you should have authority to prevent an imminent hazard, isn't that the phrase used here? And yet, I would assume you would agree that those hazards are going to be more prevalent in rural and isolated communities than anywhere else. How are you going to get notice of outbreaks in these areas in order to exercise your responsibility? Certainly New York and Chicago and Washington, D.C. systems are going to have adequate attention so that you won't be dealing with them in the event of imminent hazard. It is the smaller systems that you are going to have to deal with, isn't it?

Mr. FRI. Yes; as I said in my testimony, much of the problem of inadequacy appears, from our community water study, to come from many of the smaller community systems, smaller systems serving smaller communities. The notification problem is a serious one. I think it is inherent in the situation. There are 40,000 community water systems in the country alone, and the question is, how do you get 40,000 people to report to you?

Fundamentally, we would rely on State and local responsibility, and prop that up the best you can rather than sending "feds" out to examine 40,000 systems once a month. Both S. 433 and the administration bill, point out that responsibility of Federal Government should be to monitor State programs to a limited extent, just make sure that they are enforcing their laws, and duplicate the State program as little as possible. What we have tried to do in the administration bill, as we are concerned about this question of reporting, is to build a foundation based on the whole concept that there must be right of entry, there must be adequate monitoring, and there must be reporting of the quality of the water, not only to us, but to the public who is served by this system.

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And by emphasizing those points in the structure of the administration bill, and making the monitoring requirement part of the primary standard, which must be met, we hope to get the kind of reporting that we need. This is the answer to the basic question of how are you going to get people to report to you in a situation where you have 40,000 water supply systems, no matter what legislation you pass, unless you put a bunch of Federal inspectors out in the field to inspect each and every one of those systems on a regular basis.

Senator STEVENS. But you have used a threshold concept of imminent hazard. You have used that concept in the Federal Food and Drug Act, for instance, and didn't send the inspectors out to look at canneries and slaughter houses and the Federal Government only got involved after we had discovered a virus. We wouldn't have a Federal food and drug enforcement program. You are coming in at a level, threshold level, that is so high that you are getting involved only after there has been an outbreak.

Mr. FRI. Now, we are talking about two different things here, I think. One is that the imminent hazard provisions relates to the threshold for Federal enforcement.

You are quite right. The way we have structured this, the administration bill, is direct Federal enforcement against the standard itself as based on an imminent hazard finding; however, the basic enforcement that we see taking place in this process is what a local system must do under State supervision. Typically, this includes adequate monitoring and reporting the results of that monitoring if something has gone wrong.

Senator STEVENS. Let me postulate this to you. We have got canneries in Kodiak, Alaska, and we send Federal Food and Drug Act inspectors to Kodiak to look at those canneries to make certain that the standards of cleanliness, and the quality of the fish are maintained. But you are saying that the community water supply, which the canneries use, is beyond the scope of Federal inspectors.

Mr. FRI. No; I didn't say that.

Senator STEVENS. I would think there would be nothing that would be more central to the health of our citizens than safe water, and I don't understand this imminent hazard threshold in regard to your enforcement activities. Certainly the Federal Government is enforcing the Federal Food and Drug Act right down to the guy who is cutting the fish open.

Mr. FRI. I understand that. But what we can do is this: Let's suppose we go into the water supply system in Kodiak. We would from time to time, either going through the State program or directly to the city, itself, determine—and we could determine through correct Federal inspection whether adequate monitoring is taking place and whether adequate reporting to the public is taking place, so that, if the primary standards were, in fact, being violated, the public was being notified. Failure to either let us in to look, failure to monitor or failure to report to the public, to the State and ourselves is a prohibited act under the administration bill.

So we can, I think, under this legislation, insure that the water supply system in Kodiak or any place else in the country is report-

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ing, in fact, on a regular basis, to the public that uses that water. Our feeling is that when you get your water bill from that system, which, if it is like most systems, is charging you on a use basis for that water, and with that bill, you also get a little notice saying your water isn't any good and it is dangerous to your health, given the citizen suit provision built into our legislation, that there will be rather quick action taken to correct that situation.

Now, if that situation persists and nobody does anything about it and it does begin to present an imminent hazard, we can move in with Federal enforcement to make sure corrective action is taken, but there is a Federal—it is a prohibited act under the law, but there is Federal enforcement to insure that the public is put no notice as to the quality of its water.

Our belief is that once that notice is given, and based on the experience we have had under the interstate carrier program, once that notice is given, there will be quite speedy remedial action. Folks just don't like to be told their water isn't any good.

Senator STEVENS. I think that is one of the basic differences apparently, between our bill and the administration's bill.

I have to smile a little bit because I have watched my wife open up a package of cigarettes, every morning, and I don't think a warning is stopping smoking at all. I am not sure that a warning is sufficient, and it seems to me, and I think this reflected in the bill last year, that the committee feels there is a lower threshold for the entrance of Federal enforcement activities than the occurrence of an imminent danger. It would seem there must be some way to work that out. I don't see how you would get involved before there was actually an outbreak, if I understand your concept of imminent danger correctly.

Mr. FRI. Well, as I understand both pieces of legislation, there must be a violation of the primary standard before Federal enforcement action takes place. So it seems that we are both in the position here, if I read these bills correctly, of a standard being violated.

Senator STEVENS. We may not be that far apart.

Mr. FRI. It is a question of when does the Federal Government then move in if no action is taken? And I guess we tend to approach it from somewhat different directions. We may arrive at essentially the same place.

Setting aside the truly acutely toxic kind of a problem that might show up where we all ought to step in agree under the imminent hazard provision, I gather the committee bill would in effect give us the right to move in after 30 days, if the State didn't do anything, and we would, under an imminent hazard type finding which says that what has happened is a serious risk to public health. I think the words in S. 433, are an unreasonable risk to public health.

I am not sure what the difference is. But we would at some point presumably say, "Look, this has gone on long enough, where a risk has built up that we consider serious and step in with relief or whatever regulation we felt needed to be issued. I suspect we would tend to wind up at the same place. We put the Administration bill together from a philosophy that says let's start on the assumption that the State and local people are going to do the job, particularly

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if the notification provisions is built in, and let us, you know, be dragged into the situation when it is warranted.

Senator STEVENS. Well, as I said, we may not be as far apart as it sounds, at least as I interpret it. You know that the question of virus in treated drinking water was raised last year at the hearings and at that time you indicated that your findings were preliminary regarding that subject and that a report was being prepared by your agency.

Then you indicated that viruses were found in finished water in Lawrence, Mass. Were those findings confirmed and can you tell us have there been any other discoveries of viruses in drinking water?

Mr. FRI. The latest report I have is this. That report which discussed Billerica and Lawrence has undergone an internal review and an external outside scientific review since that time. Question has been raised as to whether the samples were contaminated in the laboratory.

What that means is we are all convinced, or pretty well convinced that we have found viruses in the samples we analyzed. The question is where did the virus come from? Did it come from the water supply system or was it a contamination in the laboratory? They were tested as I understand it, in a laboratory that had done viral testing for a long time. And in that condition, contamination can take place.

Our scientists inside and outside the Agency are trying to sort that out. We are presently undertaking other studies, hopefully having eliminated this potential contamination problem in nine cities. The report I have here says that as of May 25, 1973, no evidence of viruses were found with the possible exception of Lawrence and Billerica, where we may have a contamination problem.

We are also developing a simple short test, 1 day instead of a 6-week test, for viruses, under a contract with Harvard University, which would tend to get us out of the contamination problem.

Senator STEVENS. We understand there was some found in this area, Fairfax County; you indicate none was found.

Mr. FRI. We have studied the Washington, D.C., system itself, which is run by the Corps. I have heard about the Fairfax County report. It is not the specific system we are studying in this area and Mr. McDermott and company are trying to find out just exactly what happened in that case. I don't know whether we know definitively.

Senator STEVENS. In case it comes up, could you give us a short report on that if you find out what was the situation in Fairfax County. You don't have to give it now, but if you can give us a report when you determine what it was. Your testimony is now that as far as those two prior incidents are concerned, you are not confident where the virus came from.

Mr. FRI. That does seem to be a problem. We have had this reviewed now and there is a scientific dispute over it within the Agency which has came to my attention when people started asking, whatever happened to the virus study? And the dispute has surfaced. I am not scientist enough myself to resolve it correctly, but there does appear to be some potential for contamination.

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I think as I testified last year, what is important here is to realize that there can be a problem, a virus contamination of drinking water. I am sure that that is not a disputed statement at all.

Other countries have worried about this problem. We do need to get on with it to perfect our measurement technology. We do not, it seems to me, at this point, have evidence that we are dealing with an imminent hazard.

But it is a problem which is certainly of sufficient concern to require study and solution and we are working at that and the fact that we may have had a blitz on these two studies does not invalidate the basic thrust of our program.

Senator STEVENS. You have opposed the operation and maintenance requirements as part of a Federal system. Is it your position that these requirements are not necessary?

Mr. FRI. I think operation and maintenance requirements and guidelines are highly desirable. We have not included them in the administration bill as part of a mandatory standard for a couple of reasons:

One is technical and one is administrative. The technical reason is essentially that the variations in operating and maintenance practices around the country caused by local geographic, hydrologic and other conditions, make it rather difficult to write a very specific operation and maintenance standard.

Senator STEVENS. You are talking about a national level?

Mr. FRI. National level.

Senator STEVENS. Are you satisfied that there are such standards on the State level?

Mr. FRI. We are satisified that it is possible to set those, in that a number have been set. I can't tell you off the top of my head how many.

Senator STEVENS. But you wouldn't require them to be set?

Mr. FRI. That's right.

Senator STEVENS. Even by the State governments?

Mr. FRI. We would not statutorily require them to be set by the State governments, that's right.

Mr. MCDERMOTT. We would strongly encourage the States to do so.

Mr. FRI. There is a whole lot of resistance to that idea. The other administrative idea is making it part of the Federal statutory standard, particularly if there were Federal "match-in" authority, this would get us involved potentially in a lot of action which are things that are nice to fix up, but do not result in a violation of the primary health-related standard which is, after all, the objective of the exercise.

Senator STEVENS. Are there any States that have them now?

Mr. MCDERMOTT. I don't have that information with me?

Senator STEVENS. Could you provide it for the record?

Mr. FRI. Surely.

Senator STEVENS. Could you give us some examples of what type of operational requirements you think might be appropriate even if they are on a State level? This is another difference between us.

Mr. FRI. That is true.

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[The following information was subsequently received for the record:]

Few states have specific or extensive standards covering operation and maintenance. Thirty do have some standard in the form of a statute or a regulation. Fifteen have policy statements and 16 have no reference whatsoever to operation and maintenance.

OPERATION AND MAINTENANCE REQUIREMENTS

State law should authorize the organizational entity responsible for water supply surveillance to establish regulations governing the operation and maintenance of water supply systems. The regulations should set forth operational and maintenance requirements, which when followed will insure that a water supply system will perform as designed and that the possibility of system failure is minimized.

The following general areas should be covered:

1. Certification of water treatment plant operators—training, experience, examination, etc.
2. Procedures for examination of potable water.
3. Plant quality control measures and recordkeeping.
4. Requirements for operational recordkeeping.
5. Operational requirements of the various unit processes used in water treatment, including the provision of reserve or emergency capacity.
6. Protection of finished water quality in reservoirs and in the distribution system.

The "Manual for Evaluating Public Drinking Water Supplies" GPO (1972–759–281/2113) contains various operation and maintenance requirements. Several are reproduced below:

Supervision

Every water treatment plant producing water for public, domestic use should be under the full-time control of a tecnically trained and State certified supervior. For certain types of small plants, part-time trained supervision may be permissible; in such cases, the supervisor should be on call for any emergency and should inspect the plant at least twice each week.

Laboratory Tests and Control

All water quality tests should be made in accordance with the current edition of Standard Methods for the Examination of Water and Waste Water. The schedule of laboratory tests followed in controlling the operation of a water treatment plant will vary with the volume and character of the water being treated.

Chlorination

Chlorination equipment should be selected, installed, and operated to achieve continuous and effective disinfection under all possible conditions, with enough stand-by units to ensure uninterrupted operation. The capacity of the regular chlorination equipment, stand-by equipment excluded, should exceed the highest anticipated dosage. The determination of this maximum dosage (and normal dosages) should be made with the guidance and approval of the appropriate health agency. The characteristics of the water to be treated, conditions of water use, and type of chlorination provided, i.e., free or combined chlorine residual, should be considered. Frequent operation of stand-by units to ensure reliability can be accomplished by rotating the stand-by assignment from unit to unit on a monthly basis.

Rapid Granular Filters

In general, rapid granular filters should be designed and operated to maintain high efficiency in particulate removal and to keep the filtering medium free of mud balls, cracks, and other hindrances to efficient filtration. The total available filter area should be divided into several independent units so that maximum demands occurring during cleaning or repair of individual units can be met. Rapid granular filters are operated at 1.5 to 3.0 gallons per square foot per minute and are usually cleaned every 12 to 40 hours. Cleaning is normally done when sufficient head loss has been established to put the bed and its underdrainage system under partial vacuum or when there seems to be

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danger of a breakthrough. This partial vacuum should not be allowed to be come large enough to cause air binding or shrinkage cracks to occur; back washing should be done before evidence of a breakthrough is seen.

FLUORIDATION

Fluoridation operations in public water supplies should be checked very carefully in the course of a sanitary survey. Accurate and complete record should be kept at the plant, and all responsible personnel should be competent to operate the fluoridation equipment, with strict attention paid to the operation of the dosing equipment. Dry chemical feeders can be clogged by lumps formed in the holding bin, and hydrofluosilicic acid feed equipment can be corroded because of the active nature of the chemical. Fluoride dosing devices should be checked frequently by the operators to assure accurate dosing. All dosing devices, whether they are single-set constant flow dispensers or dispensers paced to the flow of water through the plant, should be checked to see that they perform reliably.

WATER DISTRIBUTION SYSTEMS

The distribution system should be maintained to prevent contamination of any part of the system during necessary repairs, replacements, or extensions of mains. When pressure in any part of the distribution system becomes abnormally low, provisions should be made to notify consumers in the area of necessary protective health precautions.

Senator STEVENS. Is it not?

Mr. FRI. Yes.

Senator STEVENS. You would oppose even the concept that we mandate the States to have an operation and maintenance standard.

Mr. FRI. Well, it is not in the administration bill. I think we both see that the States should have such standards. The question, I suppose, is really one of do you think that they are going to do it anyway or does it have to be federally mandated?

Senator STEVENS. In the pollution of air, we have mandated the States and you have to approve the standards, don't you?

Mr. FRI. We do for sewage treatment plants, but there is a situation where we are handing out 75 percent of the dough for the plant itself.

Senator STEVENS. Maybe that is another justification for having a little bit of a grant in there.

Mr. FRI. I don't think I would see it that way, Mr. Chairman. Otherwise under the new Water Pollution Act, we write a permit for the municipal plant, say this is what the discharge has to look like, we establish the monitoring requirements and that is pretty much it, in right of entry requirements. That permit looked an awful lot like the procedure that is under this act. And we have provided gobs of technical information on how to run the sewage treatment plants.

Senator STEVENS. Are cross-connection control procedures necessary for public water system? Let me tell you the staff informs me that it is possible that this type of problem was the cause of the hepatitis outbreak on the Holy Cross football team, for instance, and that cross-connection control procedures reduce possibility of contamination in water systems as a result of reduction in pressure and subsequent siphoning.

Would you agree they are necessary?

Mr. FRI. Well cross connection problems are serious problems of water supply systems, and we need procedures to correct them. The

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engineering crowd could probably talk more intelligently than I about the specifics of that problem.

Senator STEVENS. This leads to the question of whether you will be precluded from establishing cross-connection procedures if you are restricted to specifying only the maximum amount of contaminants? In effect, you are involved in systems analysis, not in direct analysis.

Mr. FRI. Well, it falls essentially under the same argument as operations maintenance procedures, yes.

Senator STEVENS. Would you be precluded from getting into that activity under your bill?

Mr. FRI. Not in the sense of providing information, unless it was an imminent hazard situation.

Senator STEVENS. Section 8 of S. 1735 requires each State to submit a water supply program plan to EPA within 1 year after enactment. We understand the purpose of that section as it is in S. 433 is to insure the States are operating their programs properly. But what is the inducement under your bill for the State to comply?

Mr. FRI. To comply with submitting a plan, or doing——

Senator STEVENS. We have program grants, we have something we can cut off if they don't do it. What do you do if they don't comply?

Mr. FRI. Well, as I say, our experience so far with the States has been on these services that many, if not all, of the States would like the kind of commentaries we can provide them on how to run a program, what is wrong with the program, and that when we do that, they are, or have been thus far, quite expeditious in taking action to resolve problems.

Again, I go back to the point that our belief is that with a water supply case, unlike the air and water pollution cases, that the program grant is not necessary to stimulate interest in the program, and that the States thus far have willingly taken and acted on our recommendation.

Therefore, getting this plan will facilitate that kind of communication, and I don't think we need the authority to threaten them with cutting off a State program grant in order to get action on the part of the States. We haven't had that problem.

Senator STEVENS. Well, you haven't had the authority yet. What would you do if the State didn't give you cooperation?

Mr. FRI. We would probably engage in a lot of dialog with the State, but we won't have the authority to extract the plan from them. They can also tell me to take our money and go home, and that has happened a couple of times.

Senator STEVENS. Yes, I understand that has happened in a couple of States, too, but still it gets to a basic problem. If we had similar provisions, we could cut off all Federal grants if they don't comply. There is some concept of the carrot and the stick in terms of double standards.

Mr. FRI. That is right, and I think the committee bill reflects that concept which is the concept that is not unfamiliar in legislation of this type, whether it is in the environmental field or lots of other fields. I simply go back to our view: We all agree that there is a

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problem. I think we are in agreement on the mechanics of what needs to be done to solve it. I am not persuaded that because there is a problem and because of the mechanics and things that need to be done to solve it are clear, that the Federal Government has to necessarily step in.

Of course, in this case, our experience is quite persuasive to me, The impetus behind getting public water systems fixed up is so substantial that we can get this job done without engaging in the administrative machinery that goes along with program grants and the like.

Senator STEVENS. If you will bear with me, this is a rather long, complex inquiry concerning a definition of the public water supply system. The definition of the public water supply system under both bills, as I understand it, includes any system which provides drinking water facilities or establishments serving travelers in intertate commerce.

S. 433 goes on to authorize EPA to exclude any such system or class of systems if unreasonable threats to public health will not result. This portion of the definition, I take it, comes with respect to drinking water served in interstate commerce, et cetera.

I am told that it has been estimated there are some 200,000 of these throughout the country, and that studies by GAO and EPA have indicated a substantial number of problems at these facilities. We went through that before. I assume you would agree with that so far. Is that correct?

Mr. FRI. Yes.

Senator STEVENS. These are substantial area problems.

The purpose of the exclusion and the definition is to remove from regulation those semipublic systems by class or by State if a proper regulatory job is being done by the States, or the use of drinking water at such facilities is minor, like a small country gas station.

If this exemption provision is retained, what would be your estimate of the number of these systems that would remain subject to Federal regulation?

Mr. FRI. I don't have an estimate of that, do you, Jim?

Senator STEVENS. Put it the other way around, how many people are being carved out by this?

Mr. MCDERMOTT. I think, sir, the answer to your question is this. If the 200,000 systems you refer to, we estimate that some 30,000 could and should be subject to regular inspections by State or county government to assure the quality of water.

Now, in terms of the number of population—the populations referred to in the context of being carved out—I think you have to realize the 40,000 community systems currently serve an estimated 160 million people. That is the permanent resident population.

On the other hand, we have the 55 million people beyond the community systems, plus the transient population that would be using the 200,000 systems you refer to.

Senator STEVENS. So we are really excluding 170,000 small systems and aiming at the 30,000, is that right?

Mr. MCDERMOTT. Not entirely, sir. As I said before, the 30,000 systems should be subjected to regular insjections. Perhaps this is in the order of once a year or perhaps once every 3 years.

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Now with respect to the remaining 170,000, the occasional gas station or cross roads restaurants, we would suggest that these should also be subject to inspection, but with a lesser frequency.

Senator STEVENS. What would it cost the States to maintain some regulations on those? Aren't they already doing it through their health departments?

Mr. FRI. Substantially, it is meant to be done by the health departments, and the estimate we have, as I understand it, for the 200,000 systems is some $60 million a year, although that is predicated on a regular inspection type argument as is contemplated for the community, the large and regular systems.

As Mr. McDermott pointed out, what we are interested in here is that we think all of these systems at some point or another need to be looked at. The question is really one of frequency more than carving out for no attention whatsoever.

Senator STEVENS. We are right back to our grant system section again, then. If we have the section in S. 433 that provides that two-thirds financing of such programs and also requires that such an inspection program be maintained, wouldn't this accomplish the purpose of including these systems that have been excluded from the Federal system in the State programs?

Mr. FRI. Well, I don't think it would cover as much. What you would have to argue is that by giving the States more money, they would do more of the work. We have, or I have, looked at some of the figures that we have. Let's take just the community systems, of which we have a fair number. We estimate about $40 million for the 35,000 or 40,000 community systems.

Of that, $30 million is connected with monitoring and surveillance of programs. $10 million is largely overhead, travel, and that kind of thing. $10 million is roughly what is being spent today on water systems, State water supply programs in the country.

Now, I am persuaded, myself, that I don't really see the reason why the Federal Government should pick up the tab for the other $30 million, which is essentially providing a service by the States to the systems. They are supplying a product for which they charge. If a State needs more funds to provide that service to people who charge for their product, I would hope that they would charge for their service.

There is nothing much to be gained by running that money through EPA's administrative machinery and taking a few percent off the top for administrative expenses. I just don't see it, I guess, as a real need for the Federal Government to move in with Federal dollars to pay for a service provided the people are charged for the product.

Senator STEVENS. But these are semipublic systems. A gas station is not charging for its water. The trailer camp is providing water incidentally to the other services they provide. They are not in the business of providing water.

It would seem to me that if you want to extend the inspection system to the great bulk of the 200,000 systems, they will be excluded under your system.

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Mr. FRI. We are all covering, I believe, the people involved in interstate commerce. What we are talking about is subsection C of that paragraph, that would decide there is no unreasonable risk to public health.

Senator STEVENS. I think I am confused. I would appreciate it if you would give us a statement of the number of these facilities throughout the country and the number that your bill would cover, the number that you think S. 433 would cover, and what you think it would cost the States to provide coverage for those that are excluded from either bill, and then we will have a definition of what you were talking about in terms of grants.

We are talking about giving the States assistance to cover those areas which would not be covered by the other bill, whichever one Congress passes.

Mr. FRI. Let us provide you a written statement just so the record is clear.

[The following information was subsequently received for the record:]

It is estimated that there are roughly 200,000 water supply systems in this country serving the treveling public. About 80% are located at highway rests stops, restaurants, motels and service stations. The remainder serve parks and recreational areas.

The Administration bill (S. 1935) and S. 433 are substantially equivalent as to the water supply systems that would be covered under each bill. Both bills provide that a public water system is a system that provides drinking water to ten or more premises or 40 or more individuals. Both bills also cover systems that provide water to carriers serving travelers in interstate commerce or to facilities or establishments serving travelers in interstate commerce. S. 433 further provides coverage for "any other system that may pose an unreasonable threat to public health." While this provision might be useful in a given situation we would expect that substantially all systems which serve the traveling public and that would pose a threat to public health would already be covered by other provisions of the definition. There is some difference with respect to the coverage in the two bills as they relate to "facilities or establishments serving travelers in interstate commerce." S. 433 provides that systems under this provision may be exempted if there would be no unreasonable threat to public health. While no similar exemption is provided in the Administration's bill, as Mr. McDermott stated at the hearing (page 130 of the transcript) a very substantial number of these systems would not need regular inspection but should not be ignored entirely. We thus see the overall coverage under each of these bills as covering substantially the same systems. Of the 200,000 or so systems referred to earlier it is our estimate, agains very rough, that 30,000 to 45,000 of these should have regular inspection of a frequency of from one to three years and the remaining could even be less frequently.

It would be difficult to give an estimate of the costs to the States for coverage for those systems that are excluded from these bills. We are not certain how many would be excluded. In fact, very few might be excluded altogether, but as we have pointed out, there would be many systems that would require very infrequent inspections.

Mr. FRI. By looking at these two pieces of language that appear again, very quickly, I think we are both talking about the public systems, 10 or more premises, 40 or more connections. We are also talking about travelers in interstate commerce. The committee bill goes on then to provide an exclusion to those interstate systems, or those systems involved in providing drinking water to travelers in interstate commerce.

We both begin with the same universe, and then the committee bill carves down that universe and carves down part of the systems that

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are not going to present an unreasonable threat to public health. But let us put that together in a package and give you the numbers so that it is quite clear.

Senator STEVENS. All right.

Thank you very much. We appreciate your courtesy and your assistance. We have another vote on.

[Recess.]

Senator STEVENS. We will call the hearing back to order. Some of my other colleagues will be with us in a few minutes.

I understand we have Dr. Jay Lehr of the National Water Well Association, Mr. Robert McCall, chairman elect of the Conference of State Sanitary Engineers, Dr. Leonard Dworsky, Water Resources Research Department, Cornell University, Dr. George Symons, president elect of the American Water Works Association.

Mr. SYMONS. President.

Senator STEVENS. Mr. Wesley Gilberston, immediate past president, American Academy of Environmental Engineering.

I have not been informed how you gentlemen intend to proceed. We would be happy to have you give your statements, and summarize them, if you will.

I would tell you that the chairman of the subcommittee intends to be here in a few minutes, and I will have to leave you gentlemen to catch an airplane. I hope you will excuse me for leaving when that event occurs.

Who will start the panel?

STATEMENTS OF DR. JAY LEHR, EXECUTIVE DIRECTOR, NATIONAL WATER WELL ASSOCIATION; ROBERT F. McCALL, CHAIRMAN-ELECT, CONFERENCE OF STATE SANITARY ENGINEERS; DR. LEONARD DWORSKY, WATER RESOURCES RESEARCH DEPARTMENT, CORNELL UNIVERSITY; GEORGE SYMONS, PRESIDENT-ELECT, AMERICAN WATER WORKS ASSOCIATION; WESLEY GILBERTSON, IMMEDIATE PAST PRESIDENT, AMERICAN ACADEMY OF ENVIRONMENTAL ENGINEERING

Dr. LEHR. Thank you, Senator Stevens.

Just to make a brief statement of what our approach is here and how we want to handle the panel, the head of your staff, Mr. Brownlee, asked us to try to get a group of people to represent the water supply industry throughout the United States from the scientific and industrial standpoint. We have thus gathered amongst the five of us representatives of the major organizations in the area of water supply, represented from both the scientific standpoint and from an industrial standpoint. I think we are all supportive of the legislation, but all have points that we would like to make that could still improve the legislation.

I want to state in the beginning, that we may favor this legislation, or legislation like it, and do want to see a bill going through the Congress this year. We feel we have points worthy of the committee's attention, which would not stall the movement of the bill through the Senate.

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I represent the ground water supply industry throughout the United States as executive director of the National Water Well Association, an organization of science and industry, and have spoken at seven or eight hearings in the past 3 years addressed to water supply legislation.

I have prepared a formal statement and will just summarize it.

Dr. LEHR. I wish to enter a few additional documents into the record and hit three major points in the bill, and also comment briefly on the remarks of Senator Magnuson made this morning.

I feel the bill is lacking in two major areas. One of these is the fact that we have a problem in the protection of our ground water resources, which are now supplying approximately 50 percent of our population with drinking water, due to the fact that the Water Pollution Control Act, did not properly treat the problem of ground water protection. I was hoping that possibly something could be done as an amendment to this bill that would control potential pollution of our ground waters prior to tapping them for a source of drinking water.

This should not have been necessary had the Water Pollution Control Act properly handled it, but it left a major loophole, which I think was forced upon us by the oil and gas industry, and it can be handled in this legislation, or perhaps more properly in separate legislation, but I think the committee should be aware of it, because it is going to hinder future improvement of our water supplies.

Without saying any more about it, to reflect the point I wish to make here, I would like to enter into the record an article that appeared in The Wall Street Journal entitled, "Leak Legislation," referring to the Water Pollution Control Act which had not yet been passed at this time.

It appeared January 7, 1972, and I think it will summarize what I am trying to get at and what I think could be a weakness in this bill.

Senator STEVENS. That will be made an attachment to your statement, and it will be printed in full in the record.

Mr. LEHR. Thank you.

Secondly, I wish to address myself to the fact that this bill, as with the major bill in the House of Representatives, Mr. Rogers' bill, refused to address the subject of the organization of EPA to implement this legislation.

I have received no optimistic feedback from anybody in either the House of Representatives or the Senate with regard to a willingness to direct EPA as to how to handle this legislation, and I think it is particularly important. Senator Magnuson brought this up this morning.

This all started when the Bureau of Water Hygiene, which was then in charge of water supply, was in HEW. They were a very weak organization, and when EPA was being formed, I testified before the Executive Reorganization Committee that if they were going to bring the Bureau of Water Hygiene into EPA and make it a water supply office that it should be given a view and power and

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responsibility and proper financing if it was going to begin the work of improving our downward moving water supply situation.

This was not done, and it still has not received proper visibility. I think funds that could have been used for water supply have been diverted and used elsewhere, and I think that unless the Congress is willing to make some kind of statement directing EPA how to administer this new legislation, that the intent of the legislation may never be carried out.

About the best example of this is the fact that an effort to improve our water hygiene sitution goes back to Senator Magnuson's comment this morning where his own appropriations committee was instrumental in doubling the budget of the Water Supply Program back before it moved in EPA.

Actually, when the budget came through, it ended up in EPA, and since that time—since that time it has received a great deal of publicity, and people all the way from Nixon to Nader have recognized that water supply is a major problem, and yet not only is the budget not miving up; if anything, it is moving backward.

I had the opportunity, and this now goes directly to Senator Magnuson's comment, about a month ago to testify before Jamie Whitten's committee on appropriations for the environment where I was basically called upon to defend the water supply budget of EPA, not to boost it, but to defend it against cuts.

EPA is in effect cutting both financial support and manpower support from it, and because Senator Magnuson brought this up, and because in my testimony before Mr. Whitten's committee, I clearly stated the chronology that began with his improving the appropriations to water supply some 3 or 4 years ago I would like to enter that very brief testimony into the record of this hearing.

Finally, on that point, I would like to enter a newspaper article that appeared on Sunday, May 13, from The New York Times entitled, "Impure Tap Water," by Gladwin Hill, as an up-to-date summary of the problem that we are facing with our water supply.

What I am trying to get across with both these documents is that leaving the water supply to the whim or the personal judgment of the people at the helm of EPA may not get the job done. I think something more significant is going to have to be done.

One point I bring out specifically is that if only the regional EPA offices can be more tightly linked to the water supply office here in Washington in terms of working together and handing down directives and seeing that things are done in a similar manner in all the regions, that alone would be a forward step in the organization as it presently exists.

The final point I wish to make is a positive one, and it deals with the rural drinking water supply survey that originally appeared in Congressman Robison's bill who described it briefly in his testimony this morning, which appears in this Senate bill, but does not appear in the House bill.

Through an organization I am part of, the Commission on Rural Water, we have been funded by OEO to demonstrate the ability to bring adequate drinking water to low-income rural families in five

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States. We have been most successful in proving that this is something that can be done on a broad basis.

I think the fact that the Senate has put it in S. 433 is significant, and I simply want to insure that when this bill reaches a conference committee with the House that the Senate fights very strongly to retain that language in it.

I have brought with me a brochure that describes the efforts of this national demonstration water project and pretty much summarizes this rural drinking water situation. It is not my intention to have it placed in the record, though if you wish that would be fine.

I brought enough copies of this for distribution to the entire committee.

Senator HART [Presiding]. Staff advised me it would be advisable to have it printed in the record.

Mr. LEHR. We have heard testimony today on the President's water supply bill and your own water supply bill, S. 433, and I want to add this comment that I am sure will come out later, that the President's bill I feel is a bare bones approach and does not give significant sums of money for research and training which I think is critically needed if we are to get the most in technological advances from the industry as well as universities and State governments, in the areas of research and training.

The States are going to need a tremendous amount of help to implement this legislation, and I feel this is basically ignored in the President's bill and I again urge this committee to see to it that adequate funding is maintained when this bill goes to the floor of the Senate.

That ends my comments and I believe we decided that Mr. Bob McCall would go next.

Mr. Stevens did go through and introduce people. For your benefit, Mr. Hart, it might be of benefit if you met each person individually.

Senator HART. I have been whispering up here.

Mr. LEHR. I wanted to tell you who we represent. On my left is Wesley Gilbertson, of the Pennsylvania State Environmental State Protection Agency; to my left is Dr. George Symons, who is currently president of the American Water Works Association, and on my right Colonel Robert McCall is the director of environmental health services for the State of West Virginia, and a member of the Conference of State Sanitary Engineers, for whom he will be speaking, and on my far right is Dr. Leonard Dworsky, and he is speaking for the University Council on Water Resources.

The point I want to make here is that five of us and myself representing the National Water Well Association represent a broad cross section, virtually the entire spectrum of scientists and industry people in the water supply field in the United States.

Mr. MCCALL. The Conference of State Sanitary Engineers welcomes this opportunity to appear in support of Federal legislation aimed at improving the quality of community water supplies in the Nation.

I am Robert G. McCall, Chairman-Elect, Conference of State Sanitary Engineers. I have been designated to speak for the confer-

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ence on this bill. I am a professional sanitary engineer and am employed as Director, Environmental Health Services, West Virginia State Department of Health. Public water supply surveillance is one of the programs under my supervision. The conference is comprised of the officials in each State who, among other environmental health program responsibilities have responsibility for the administration of their State's public water supply program. In the event Federal legislation is passed, it is our membership who will be responsible for assuring that his State's responsibilities are discharged. Hence, our interest in this Federal legislation is of the highest order and we desire to provide you with our assistance, based upon the thinking and considerable experience of our members.

I do not desire to take your time today to reiterate documentation previously presented on the need that exists for improving the public water supplies in this country, nor to further qualify the past efforts of the conference in seeking such legislation. Suffice to say that the Conference of State Sanitary Engineers recognizes the need for an augmented national public water supply program, primarily State-based, with strengthened State and local regulatory programs and a Federal role in drinking water standards, research, training, technical assistance, and financial aid on the above as well as State program costs.

I do want to introduce into the record a policy statement that was passed by the conference in its executive session in San Francisco on May 10, 1973. I have made that available to the Clerk, and I would appreciate it if you would insert it.

[The following information was subsequently received for the record:]

POLICY STATEMENT OF CONFERENCE OF STATE SANITARY ENGINEERS ON FEDERAL LEGISLATION REGARDING DRINKING WATER SUPPLIES

The membership of the Conference of State Sanitary Engineers has for over fifty years and still continues to be deeply involved in assuring the safety of the drinking water provided all Americans. Their responsibility is based on State laws and regulations with supervisory control carried out through State and local water supply surveillance programs.

The Federal Government currently has authority to evaluate water supplies used as sources of water by public carriers traveling in interstate commerce. This was exercised for many years by the Public Health Service, but under Federal reorganization, is now under the United States Environmental Protection Agency. Supporting services by these agencies included minimal technical guidance, training and research.

The problem of drinking water was of major environmental concern in the first three decades of this century. However, growing concern with water pollution, air pollution and other environmental problems has more recently caused serious neglect of water supply programs in comparison to the resources allocated to the newer programs.

A priority effort is now needed and the Conference of State Sanitary Engineers strongly supports an augmented national water supply program, primarily state-based, with strengthened State and local regulatory programs and a Federal role in drinking water standards, research, training, technical assistance and financial aid on the above as well as State program costs.

A national program is needed, not merely another new Federal program. Regulation of the traditional community water supplies should be a shared Federal-State program. Semi-public and individual home drinking water supplies would be a State program shared with local health agencies where available.

National drinking water standards for community water supplies should be promulgated by the Federal government with the advice of a qualified advisory

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council representing regulatory agencies, academia, consumers and utilities. Standards should address themselves to chemical, biological and physical water quality, monitoring and surveillance programs to be implemented by the States. There is no evidence to indicate the need for design requirements to be a part of Federal standards.

Enforcement must be State based except for emergencies that would transcend State capabilities. Unnecessary Federal duplication that exists in the provisions of proposed laws must be expressly avoided.

State program grants in adequate amounts are essential to a national water supply program or such program is doomed for failure. It must be recognized that an adequate national water supply program requires substantial commitment of Federal financial resources if it has any chance of success.

The Conference cautions on the compulsory provisions of public notification as contained in proposed legislation and urges the provision of options to enable judgments to be made on the public health need of such notification.

Finally, the success of a national water program is no stronger than its weakest link, so attention must be directed to ample provisions and funding for research; training of operating, teaching and regulatory personnel, Federal, State and local staffing; and demonstration of new methodology.

Mr. McCALL. In preparing for this presentation, I communicated with our membership. It was the consensus of opinion that S. 433 is a major step in the direction of meeting the objectives stated above. The committee and its staff are to be complimented for their efforts to achieve a long overdue national public water supply program so vital to the health and well being of all Americans.

We have a number of observations to make on this act which we hope you will consider in order to change the act to the point where it would meet program requirements and have a high probability of successful application.

In presenting this information, I will make reference to sections of the act and present some suggested changes with supporting information. I have also been requested to comment on the administration bill, S. 1735. It has many features similar to S. 433 but comes more closely to meeting our concept of a national program wherein State and local governments take the primary role with support from the Federal Government in establishing national standards, conducting or supporting research, providing technical assistance and program review. The lack of State programs grants is a fatal weakness in S. 1735. In discussing portions of S. 433 an attempt will be made to relate to S. 1735 as appropriate.

I will refer to the specific sections in S. 433.

SECTION 3(6)

There is an overwhelming consensus that the definition of public water system is far too broad for the first Federal legislation in the water supply field. This is most important as the number of systems will determine the resources needed to conduct the program. The full impact of the point will be self-evident when considering the program costs as discussed later under Section 11 (a), State Drinking Water Supply Program Grants. We recommend that the Federal legislation focus on community water supplies as defined in paragraph (A) (i) and (B) on page 4. In addition, many of our members consider 10 premises too unmanageable and recommend this be increased. The so called semi-public, paragraph (C) and (D) and some under (A) (ii) as well as private water supplies, must be

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equally safe but should be solely a function of State and local agencies. In the future if it is clearly demonstrated that such agencies are not effective then the Federal legislation can be amended to cover such supplies. We suggest the committee report could cover this particular point in a less restrictive manner than in report number 92-1156. It is proper that Congress express its concern about the safety of all water supplies, but it can be postulated that at this point in time they should focus attention on supplies serving residential communities and serve notice on the States that Congress expects the States to conduct effective programs on other public and semi-public supplies. If such does not occur then Congress will step in and close the gap in the future. When one considers that tooling up and meeting the above program will take several years one could expect that meeting the full requirements as presently stipulated could result in an overall slippage in meeting the needs of the greater population group. It is recognized that report number 92-1156 presented the committee's intent of a phased program but the States would feel more confident if restraints were contained in the act. The definition in S. 1735 has the same general problems.

SECTION 5(B)(1) AND (2)

These sections remain as grave concern to State personnel responsible for conducting water supply programs. We recognize that Congress desires Federal enforcement backup and we do not quarrel with this basic philosophy. We are particularly concerned over the inflexible language of the act in respect to public notice. As presently written the use of judgment for enforcement actions does not apply to public notice. The committee report presents excellent rationale regarding leeway on 30-day actions in respect to enforcement but fails to recognize that many of the same factors are as valid for public notices. Many of our members consider public notices in all instances will do more harm than good. Considering the scope of presently proposed standards, this can well degenerate into the self-defeating "cry of wolf". Public notification should be used sparingly enough so that it has real clout.

We recommend the following changes: (1) Line 3, page 9—change "shall" to "may" and insert thereafter, "if appropriate." (2) Line 4, change "shall" to "may". S. 1735 handles this matter better and enables the Administrator to exercise judgment through prescribing criteria by regulation (Section 5b). It doesn't include it as an absolute requirement in the law.

SECTION 5(C)

Recommend deletion of this section. Secondary standards are not health problems but instead relate to consumer acceptability. This appears to us to be a local problem and one that needs evaluation from the standpoint of feasibility, acceptability, economics and other factors. Smaller systems will find some secondary standards difficult to meet and then it becomes a problem of whether the consumer desires or is able to pay the bill. It appears in conflict with section 15 (1) on page 26 of the bill which states that noncompliance with the

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national secondary drinking water standard under section 4b of this act is not prohibited. In discussions following last year's hearings, it was our understanding that this section would be removed from the bill because it was not compatible with the overall provisions of the bill and did not recognize that secondary standards were indeed aesthetic standards. S. 1735 identifies secondary standards as recommendations to which we agree.

SECTION 8(A)

The provisions of this section are commendatory. S. 1735 however fails to include any provision for training which is a crippling omission. Training is needed for plant operators, system managers, and regulatory agency personnel. Being among the employers, conference members can assure you that well-trained environmental technicians and professionals are in short supply and that growing demands are not being met by supply.

SECTION 11(A)

The increase in authorization over last year's bill is noteworthy. However, this section remains of major concern to the membership as the proposed appropriations are insufficient to enable States to operate programs required by this bill. Inadequate State program grants would essentially nullify the intent of the law.

Since our 1972 testimony, the Conference of State Sanitary Engineers consulted with the Water Supply Division of EPA and participated in a joint CSSE/EPA study on a State-to-State basis to determine the funding requirements that would be needed for states to meet Federal legislation. This study has not been completed to date, but sufficient information has been collected to give us some indication of the magnitude of the problem. In addition, an evaluation had been made by EPA based upon their 1970 inventory of community water supply systems. The difference between the preliminary findings of the present study, coupled with the evaluations based on the 1970 study, and the fund authorizations in this subparagraph are rather startling.

Surveillance programs on the basis of drinking water standards currently envisioned and requirements that will be stimulated by this law would require in the neighborhood of $1,000 per year to service each community water supply. This would include an annual inspection, check bacteriological and chemical analyses, training of personnel, operator licensing, salary and travel costs, follow-up activities on deficiencies, review of construction plans, construction inspections, and the supporting activities that are so necessary in a strong surveillance program. The 1970 community water survey conducted by EPA indicates there were 40,000 community water supplies in the United States. It is likely that the current study will show an increase over this. However, using the 1970 figures, this would mean an annual total cost of State community water supply programs would be in the neighborhood of $40 million. S. 433 provides for up to 2/3rds of the cost being provided by the Federal Government. This would require a Federal grant program of $27

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million when the program reaches its peak in about 3 years, rather than the $21,300,000 stipulated in section 11 of the bill.

Studies have also indicated that the State agencies are spending about $10 million on community water supply systems. It is quite evident that an increase in State expenditures would be in order for them to provide one-third matching funds. It is therefore evident that something needs to give in relation to the State program grants. Recognition is needed that this is indeed a high-cost program and is of sufficient importance to man's health and well-being to necessitate a change in this paragraph.

The lack of State program grants in S. 1735 is an unacceptable shortcoming.

Not included in these costs are surveillance of water supply systems covered by section 3A(ii), (C) and (D) of S. 433 and section 3(6)(A)(ii) and 3(6)(B) of S. 1735. These are considered by the conference as semipublic systems and are supervised in most States by local health departments. The numbers of these systems are not known, but our partial reports indicate a total of as many as 200,000. Surveillance would be less on these but would still cost as high as $300 per year, making a national cost of about $60 million.

The need for improvement on surveillance of the latter group is not questioned but is considered a state/local program. The conference, as in the past, recommends that Federal legislation be applied only to conventional community systems and interstate carrier water. It is well to recognize that either way the cost of conducting adequate surveillance programs for a total national drinking water program will require at least $100 million annually whether the funds are Federal, State or local. The States cannot carry out the provisions of S. 433 or S. 1735 without funding support. Our membership advises us that the hopes of State government coming up with this type of money is very unlikely.

If adequate funding is not provided by Congress for State program grants, research, training, demonstration grants and an adequate EPA water supply program, then the conference suggests that the passage of Federal legislation would be meaningless. If State program grants are not to be provided, as in S. 1735, then the Federal role should not exceed research, technical assistance, training, demonstration grants, and establishing national water quality standards to be applied to interstate carrier water and as a guide to State programs.

SECTION 11(D)

This section requires a detailed State plan but no funds are specifically allocated for its preparation. Few States have the resources and funds in current programs to prepare, submit, defend, rewrite, and obtain final approval of a State plan typical of those required in other programs.

It is recommended that 90-percent grant funds be included for such preparation as provided in similar programs.

SECTION 11(D)(8)

Page 21, line 7, change "will" to "may"—for the same reasons as given for section 5(b)(1). This change provides more flexibility and

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would enable the states to act in the public interest. Corrective actions can certainly be accomplished without public alarm tactics. If not, then EPA can still require plan change.

SECTION 13(B)

Insert at the end of the section the following:

When a State has primary enforcement, representatives of the administrator will implement the above actions on suppliers of water as consultants to the state agency and in company with a state representative.

The section as written opens the door to bypassing State agencies having primary enforcement and setting up duplicate surveillance that is unnecessarily expensive, lends itself to technical second guessing, confuses the water supplier and negate the thrust that the enforcement should be by the State. The conference considers that the checks and balances provided by the administrator's control of grant funds and approval of the state plan are adequate tools for the Federal Government to be assured whether a State is conducting an adequate program or not. On the other hand, backup technical support by EPA regional office is mandatory and provisions need to be made for this. In the event that primary enforcement is not being exercised by the State, the section as written would be appropriate. The same correction and comments apply to Section 10 (b) of S. 1735.

GENERAL

The conference again urges provision in this act for an office of water supply programs in EPA. I would like to also support Dr. Lehr's observation that there needs to be a provision in the act for water supply program in EPA. We fully appreciate the administrator should be free to develop his own organization, but a categorical program office is needed to assure water supply does not continue to be lost among the heavily-manned and funded programs such as water pollution and air pollution. A strong voice at a high level in EPA is considered necessary to speak on behalf of public water supplies.

Mr. Chairman, it has been a pleasure to meet with you, and I hope the recommendations that the conference has made relative to constructive changes in this act will meet with the committee's approval. If there are any questions that I can answer, I would be happy to do so.

Mr. Chairman, thank you, and later on I will be happy to answer any questions.

Mr. LEHR. I will introduce again Dr. George Symons of the American Water Works Association.

Mr. SYMONS. Mr. Chairman, I will try to abstract and condense the printed testimony.

Senator HART. If Senator Stevens did not enter the order, let me make sure that your statement will be printed in the record in full.

Mr. SYMONS. At one point during my comments, I do want to add one paragraph which does not appear in the printed material we submitted.

I will let you know when I get there.

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I am George E. Symons, manager of Special Projects for Malcolm Pirnie, Inc., Consulting Environmental Engineers. I am an environmental engineer who has been involved in the public water supply field for the past 49 years.

Currently I am president of the American Water Works Association on whose behalf I wish to make this statement in response to your invitation.

The American Water Works Association is a scientific and educational society organized for the purpose of improving water service to the public. Its 23,000 members are representative of an industry that now serves more than 175 million Americans through more than 30,000 water utilities.

Therefore, its interests and objectives directly parallel those of S. 433 and S. 1735.

In working toward its objective of promoting better water service for those Americans now served by public water supply systems, the association has been concerned over the constantly diminishing Federal attention to the technical and training problems of the water supply industry.

At a time when public water supply problems are burgeoning this lack of Federal attention will inevitably lead to a crisis in water safety that will have to be met by an inefficient crash program.

Although the association strongly believes that most of the problems in the field can be solved at the level of government or private enterprise nearest to the people to be served, it recognizes that the small unit operations that constitute most of the nation's 30,000 water utilities are not equipped to do basic research or to provide advanced training in the developing technology of the field.

Thus, it feels that provisions in S. 433 for support or research and training as well as those which give assistance to State agencies in their surveillance and technical assistance roles, are important steps to insure continued safety and service of community water supplies in the United States. We are glad to see that in the bill.

The association strongly favors the application of a national primary drinking water standard to all water supplied through public water systems thereby also helping to assure Americans of the continued safety of their tap water.

It is not our function to deal with rural water systems, and we do not make comment on that area.

Toward this same objective, the association has, over the past 3 years, been promoting an Action Now program urging all water utilities not only to meet minimum safety standards but to work toward quality goals that will take full advantage of present water technology and thus not only meet but surpass aesthetic standards as well.

The American Water Works Association has water quality goals that are higher than the minimum standards proposed in the Federal drinking water legislation.

Although AWWA is in favor of national primary drinking water standards for the end product, that is the water delivered to the consumer, it strongly opposes the idea of setting standards for construc-

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tion, maintenance or operation. Such standards will make water supply technology inflexible.

The regulations should apply to the end product, the product that the public receives. If utilities can guarantee the quality of the end product, they should have the right to select the alternatives that will achieve it.

The association agrees with the concept of a primary standard to protect the health of people and a secondary standard for those aspects of water which affect taste, odor, and appearance.

This arrangement will make it more practicable for utilities in different areas of the country with different kinds of raw water to meet the mandatory requirements. The association also believes that standards for drinking water quality must be based on scientific fact, established through basic research in the field of water quality.

Standards based on emotion can be dangerous in undermining the confidence of the public in water supplies that are safe. For these reason, the association believes that standards should be developed under the soon as practical basis provided for in S. 1735, rather than the strict time schedule of 180 days provided for in S. 433.

Perhaps some compromise between the two may be the answer. The association recommends that the presently established Public Health Service drinking water standards, together with other confirmed standards based on adequate research, be put into effect as interim standards until new criteria based on further research and experience can be developed.

Recognizing that the current level of excellence in public water supply service was achieved through Federal-state-local teamwork, the association wishes to emphasize the importance of maintaining the strength of the State member of that team as the enforcement agency for the regulations established in the proposed act.

Although state surveillance agencies have, in some instances, been weakened by loss of personnel and funds to the pollution control effort, the basic surveillance and enforcement structure is still intact and should not be either duplicated or circumvented by Federal action. Any measures directed toward strengthening the State agencies are definitely steps in the right direction.

Strengthening the Federal member, also weakened by the dollar and personnel demands of pollution control, is also necessary. In this regard, the research and training provisions of the act can promise real assistance in developing programs that will be commensurate with the health significance of public water supply.

As an example, Federal funds, over the last few years, have trained 16,000 waste treatment plant operators. At the same time only token Federal assistance has been given to the training of water treatment plant operators, for which there is an equally urgent need. That is why we are happy to see funds in this bill for training.

The association feels that the funds appropriated for research in S. 433 will permit a significant start on the research necessary to determine the nature and the extent of the problem of continuing to supply high quality drinking water from water sources that are being subjected to increasing contamination. Not until the beginning

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research is concluded, however, will it be possible to give any accurate estimate of how much and what kind of research will be required to keep drinking water safe.

I should tell you that a year or so ago the association was not in favor of standards applicable to all public water systems throughout the country. We favored at that time standards applicable only to public systems serving interstate carriers. In the intervening year, our committees have met and discussed this, and have decided that the rapid proliferation of small systems and the increasing mobility of the Nation's population have dictated a change in this view.

Thus the association agrees that universal and uniform application of the standards—if and only if, the standards are reasonable and practicable—will be helpful to the cause of improved water service to the public.

NATIONAL DRINKING WATER COUNCIL

The association believes that a National Drinking Water Council can be a very effective means of providing a sound base in the implementation of this legislation, but this will only be true if the council is made up of representatives of the various elements of the public water supply field engaged in the management, operation and surveillance of community water supply systems.

It is through such a council that the cooperative Federal-State-local relationship can be given official sanction and direct and effective communication. The current language of S. 433 precludes the appointment of water utility professionals.

Believing that such practical input is essential to the effective function of the council, the association urges that the language of this section be changed to prescribe such representation rather than preclude it. The association recommends that a minimum of three managers of community water supply systems be included in the membership of the council.

Although S. 1735 does not include provisions for a council, it does recognize the value of professional experience in its provisions for giving consideration to the views and recommendations of recognized experts in the field of water supply engineering.

The associationfeels that such input is vital to practical implementation whether or not a council is established.

In addition, to these general views, there are several specific items on which the association desires to comment:

First. Under section 10, S. 433—special study and demonstration grants, it is not clear from the language whether investor-owned water utilities can participate in this program.

These utilities constitute approximately 20 to 25 percent of the total number of community water systems and many are among the best managed and operated utilities in the Nation. They are able to make a real contribution to the improvement of the technology of the field. It is urged, therefore, that provision be made specifically for their participation in the program effort.

Second. The provision of section 5(b) of S. 1735 requiring notification of users whenever the water delivered by a water supply system is not in compliance with national primary drinking water standards would be self-defeating.

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Such standards always have large factors of safety built into them so that exceeding one of the allowable limits—health would be a signal for a change in treatment or procedures rather than for public panic.

User notification should be reserved for cases of imminent hazard when the public must be made aware of the danger.

I think we are inclined to agree with Ralph Nader that we need a clear definition of what constitutes an imminent hazard. Provision should also be made in section 5 of S. 433 to require that the findings of inspections and the information included in reports be furnished water utilities involved before making them public. This procedure will allow appropriate action to be taken without unduly alarming the public about details that have no bearing on health hazards.

Third. The invitation to citizens' civil action suits should be avoided. Such action is available to injured citizens without having specific motivation incorporated in legislation. Such motivation will tend to divert the efforts of the industry from improving water service to defending its activities against the challenge of uninformed consumer advocation. It is recommended that provision for citizens' suits be eliminated from the legislation.

These latter comments have been intended as constructive criticism. They are points that can help make the Safe Drinking Water Act a really practicable tool in the effort to improve water service to the public. The association looks forward to participating in the implementation of such legislation through its programs and personnel, and particularly in the expansion of its action now program that has exactly the same objectives as this legislation.

Thank you, Mr. Chairman, for the opportunity to express the association's views.

We feel that we are not in disagreement with many of the other thoughts expressed here today, and we have not covered them because they do not fall specifically under our purview.

Dr. LEHR. The next speaker will be Dr. Leonard Dworsky, professor of civil engineering, Cornell University.

Senator HART. I met the doctor earlier this morning. I am glad to have you here.

Dr. DWORSKY. We are pleased to be here today.

Senator HART. May I add, for you, Doctor, whether or not it is contained in your prepared remarks, during the day you heard many points made and I would encourage you and others to react to any of those points, should they not be part of your prepared statement.

Dr. DWORSKY. Yes, sir, and I think questions will help us to give you answers that you seek.

To begin again, sir, I am delighted to be here at the second hearing that the Senate has held on this subject and, again, all of us, I am sure, congratulate you and the chairman, Mr. Magnuson, and other members of the committee for taking on this initiative.

We think this is one of the most important priority matters in the field of the environment today, and without your concern and your help we would not be at this important point in the history of the development of environmental controls for human concerns.

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My name is Leonard Dworsky, as was mentioned. I am professor of civil engineering and director of Water Resources and Marine Sciences Center at Cornell University.

My formal statement today is presented for the universities' council on water resources. The council is an organization of some 70 major universities across the country. They represent the educational institutions that probably produce the predominant number of people entering our society who design, operate, and maintain not only water systems but other related matters that are important to our society and its water environment.

In 1970 at our meeting at Virginia Polytechnic and State University, Blacksburg Va.—and reemphasized again at our annual meeting in 1971 at Oregon State University, Corvallis, Oreg. we resolved the following, and I would like to read the last paragraph of the resolution.

Therefore, be it resolved, that Federal responsibility for the provision of safe community water systems be recognized through new legislation applicable to all public water supplies which would establish and maintain applicable chemical and biological drinking water standards, encourage State and local programs, and substantially increase appropriations for these purposes, together with a vigorous research program to establish safety of water supplies under various conditions of water quality and treatment technology, and that steps be taken to assure that the public water supply program be given administrative status in the EPA commensurate with its importance to public health.

Now, having made that statement with respect to the universities' council, I would like to make the following comments on my own, and I think for that purpose it might be worthwhile to say briefly that some 10 years ago I retired from the Public Health Services as an officer who had spent nearly three decades in this field.

Subsequently, I was on President Johnson's staff as an assistant to the President's Science Adviser for water resources in 1967 and 1968, and for the years 1969–72 I was a member of the President's Science Advisory Committee Panel on the Environment.

My comments, then, come from this experience. I would like first to suggest that we have given too much attention in nearly all of the conversations today to the problems of enforcement.

The real issue, Mr. Chairman, is that the Nation needs, most of all, new information, new knowledge, new research in order to protect ourselves against the possible disasters that may arise from chemical contamination of our water supplies.

The second issue that has not been mentioned strongly has been the matter of chemical water quality standards.

Now, we have biological water quality standards, but the chemical standards have been absent simply because HEW's general counsel's over the years have not authorized the use of chemical water quality standards as a basis for enforcing the interstate drinking water standards.

Thus, we need specific legislation for this important matter, and this is one of the major provisions of your bill. These are two of the major points that I want to make: One, the need for a research program to seek that knowledge which will provide us with the tools to remove chemical contaminants which present drinking water tech-

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nology cannot remove; and, second, to provide the opportunity for the first time to have enforceable chemical water quality standards.

The third issue, and I purposely put it in the third position, has to do with the implementation and the strengthening of the present-day programs that now exist in the States and in the localities and in the Federal Government for managing the quality of our water supplies.

Two days ago I returned from a 3-week trip, sponsored by the U.S. Information Agency, in the course of which we visited central Europe as an exchange of scientists concerned with the environment, with both university people in one central European country and with government people in another.

We lectured for 5 days each week. We visited with about 100 people every day, and it was an exciting event, but I must tell you, however, that the water I drank was mostly in the form not only of Coca-Cola, as was mentioned before, but we had a somewhat wider preference. We had some wine, some beer, we had sparkling water and other carbonated beverages.

I never drank so many bottled water compounds as I did on this trip.

When I got back to New York City Monday evening about 9 o'clock, I think there were two things that I did first. The first one was to get a good glass of water from the tap and the second was to get a glass of milk.

The point I am making here is that we have a unique situation in this country which I think has been overlooked, and that is that our drinking water supplies are still the best in the world, and I am very proud of them and I think we owe a debt to the people who have been responsible for maintaining these supplies over the years.

We need not beat ourselves all the time. We hav a very good water system generally. We are outstanding in the world. But we also have a concomitant system that results in our systems having more chemicals in our rivers than any other place in the world. We also lack adequate controls to insure that our water systems produce continually the quality supplies we need.

What we lack is the ability to assure ourselves that we will continue the progress we have made during the past. That is why your bill is so important.

I make these points because these points have been overlooked or not stressed as much as I would like to see them stressed today.

I think this will provide a better balance for the whole record.

I am not arguing with comments that were made earlier in these hearings. Yet, it is not enough to say that we are bad. There is no reason to find those to blame here. There is no conspiracy. There is no reason to say "they" are responsible. There is no "they." "They" are "we."

I fully support the Senate bill in contrast to the administration's bill, although I must say that I am personally delighted that the administration has seen fit to say, as contained in the President's Environmental Message this year, that drinking water supplies rank as a high priority in its environmental program, and certainly this

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has given us a great thrust forward to assure a bill will pass this session of the Congress.

Let me say finally that the real task before us is to see that a bill passes.

I think one other gap that has not been noted in these hearings is the avoidance of responsibility, if you will on the part of the Congress of the United States; and that the Congress has not been in the forefront of this fight, for pure drinking water until the 1970's. Of course we are delighted that you are coming on strong now in 1970, 1971, 1972 and 1973.

The record presented to early hearings before this committee contains reports of scientific studies and investigations and special studies for the last 15 or 20 years which have pointed out the need for a much stronger drinking water program—and our hope, certainly mine, has been for this day when you and the other members of the committee will sit here and listen to us and say "Now is the time to get on with the job."

So we hope that you will. We look forward to a report by the committee and we look forward to action by the Congress.

Thank you very much.

Senator HART. Thank you very much.

Mr. LEHR. The last speaker will be Mr. Wesley Gilbertson.

Mr. GILBERTSON. Thank you, Mr. Chairman. I represent the American Academy of Environmental Engineers in addition to representing my State or commonwealth, as we call it.

I also would like to say that I am a member of the executive board of the American Public Health Association, which is, I think, well known to the chairman. This association also favors legislation of the general concept before the committee. I have conferred with the Washington office of the American Public Health Association today, and a complete statement of position will be forwarded to the committee very shortly. So you can anticipate receiving this statement, in general, supporting such legislation.

Senator HART. When it is received we will make it part of the record.

Mr. GILBERTSON. Thank you.

I, too, have a background in this field. I was a member of the U.S. Public Health Service, and it fell to my responsibility back in the early 1960's, one of the activities in the Division which I supervised, was the interstate carrier program, which included the PHS drinking water supply program.

I also had under my general supervision the drinking water standards of the Public Health Service.

They were revised in 1962. I mention this background, and I think it is pertinent because there has been no lack of recognition by the professionals in this field of the need for an adequate national water supply program. There has been no lack of recognition of need for a better legislative base.

Mention has been made of the fact that the present statutory authorities leave something to be desired, even with regard to the standard setting part of it. We did have authority for setting bacte-

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riological standards, but never a clear road on the chemical standard question.

However, we went ahead and did it anyway. Maybe this is the way you have to do things in the early stages of a movement, to get it going. You just push your way through, and do what you can.

At any rate, I can say we are delighted to be at this point now where we are seeing national recognition by the Congress of this issue.

The Academy of Environmental Engineers believes there has been far too much legislative highlighting of Federal regulatory powers and the procedural questions in environmental legislation, and far too little emphasis on the essential technical research, the developmental problems, and manpower development. We hope that in the consideration by your committee you will rectify this situation which is, I think, creeping into so many of the other environmental legislative actions.

Now in my testimony, which I will brief down based on your statement that you will insert the whole document in the record, I have identified some of the types of legislative problems that have been creeping into recent legislation relating to the environment. Particularly I refer to overemphasis on procedural matters, and reporting in great detail, which consumes a tremendous amount of staff time. For example, we know that in Pennsylvania in water pollution control our reporting requirements to EPA have increased by 400 percent in the last 2 years.

This costs time, money. Some of it is of dubious value.

Mr. GILBERTSON. You referred to the point that we should pick up points that have come up during the day.

One of the approaches that has been used in some Federal legislation recently is the so-called "preemptive approach", based on the idea that the threat of Federal preemption will stimulate the States to move.

I have been on both sides of these problems, having served 26 years in the Federal Government and now for 8 years in the State. There was a time, I think, when Federal preemption was a matter that was of great concern to the States. I get the feeling to some extent now that when Federal legislation stipulates in great detail the exact format that a State program must take and does not allow the State to fit the program to its needs, that the governor and the State legislature (and I deal with them directly on this matter) take the position that the threat of a Federal take-over isn't much of a club anymore.

As a matter of fact I think some of them may look at it as an opportunity, considering the costs involved.

So I would make the point here that somehow or other we have got to plan the roles of the respective levels of government in such a way as to make this a stimulatory program, to help the State with its legislative and budget problems get ahold of these programs, without, as we say today, "turning them off."

This is a real issue, because we have seen in some instances now where the state says, "All right, we really don't care, let the feds do it".

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I think this is something we have to take into consideration. On the matter of Federal emphasis, I think the most important role for the Federal Government is to provide the technical basis for upgrading of water supply systems where needed and supply uniform standards for quality.

As to regulatory authority, I think most States now have generally fairly good basic powers. They need to be augmented in some regards, but the problem, I think, has been largely one of resources. Incidentally, at this point, I want to call attention (and I will supply a letter to you on this) that in the statement that Mr. Nader presented this morning, his references to Pennsylvania and certain standards were incorrect. I believe that either he has not been properly informed, or does not properly understand how the State program works. So for the record we will provide a statement to you on this.

Senator HART. It will be received.

Mr. GILBERTSON. Turning on the technical area, I think it is important to lay out some specifics. In my written testimony, I identified a series of reports on research needs by experts in well recognized publications. Included were such things as the virus problem, the synthetic organic chemical problem, the virus hepatitis problem, the problem of whether the standards we are using are meaningful and all these sorts of things. I point out in my testimony that even though these specific needs which I have outlined, and were included in the reports by nationally known experts as recommendations for Federal action may sound like "hot" reports that came out in 1972 or 1973, they really are not.

They go back to 1961. "One Hundred Problems in Environmental Health" was published in 1961. The Gross Committee Report to the Surgeon General was issued in 1961, The President's Science Advisory Committee Report in 1965, the Linton Committee Report in 1967, the American Public Health Association Report in 1967, and so on.

My point is simply this, if the federal program does not set up its priorities and direct its resources to researching and resolving these problems, we will probably have another report, in 1974 or 1975 repeating the same recommendations.

These scientific research efforts would be nonduplicating. They would be problem-solving activities. These problems can't be resolved by Federal directives, by enforcement orders or by court suits. They have got to be undertaken in the scientific field. So I say that the number one goal of this legislation should be to establish a national program of research and development in water supply, using manpower resources of real professional stature, not only in the Federal Government, but throughout the universities and other institutions.

I think the principal enforcement and inspection powers should remain in the States, but there is a need for program grants to strenthen these efforts. It is important to point out that it is well-known and well-documented that the State environmental programs have shifted away from water supply to pollution control, because of public pressure over the past decade, and the need for providing

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State matching funds for air and water pollution control activities.

I think it is important, too, to note the comment here during the day that the State and local governments should face up to their problems financially. The plain fact is that when we look at the air pollution program nationally, the water pollution program nationally, the Federal Government is not living up to its "money" side of the picture, either. So we are all in the same boat as has been just pointed out.

But we have got to have some kind of a financing mechanism. Now there was mention, made of a recommendation to finance the water supply inspection program through a system of charges to local water supply agencies and privately owned water supply companies.

I don't think this is a realistic approach. If the broad public interest requires comprehensive surveillance of public water supplies, and I think it does, then I think the Federal and State governments should jointly fund this program.

I don't think that the State legislatures are going to go along with imposing a levy against local agencies to inspect their own facilities. In connection with this financing question, thre was some discussion here when Mr. Stevens was chairing the hearing about how to handle the problem of the so-called semipublic supplies, the small ones which are not serving a large number of people, but which are very numerous in terms of individual situations. I believe that bracing up State programs through the program grant mechanism would actually be a direct way in which the Federal Government could assure better attention to those supplies, without getting into Federal enforcement at the Crossroads Restaurant, or filling station, or what-have-you.

So I think there are some very direct ways in which this legislation can encompass quite a variety of different fields and make a very important contribution. So I am very happy to represent these organizations that I have mentioned here today in supporting in general the concept which is involved.

Thank you.

Senator HART. Thank you. In view of my being AWOL for at least half of the day, I think it would be wise if staff would direct some questions based on the testimony.

Mr. BROWNLEE. Thank you, Mr. Chairman.

As you are all well aware, a primary difference between the administration bill and the bill sponsored by Senators Magnuson, Hart, and Tunney is the program grants section.

Some of you have alluded to what would happen to State water supply programs in the absence of program grant funding by the Environmental Protection Agency.

Would any of the others of you care to comment on this? I direct my question specifically to Colonel McCall, although I am sure others would like to answer as well. Have we had precedents for this kind of arrangement where responsiblity was placed on the States without corresponding funding?

Mr. MCCALL. In other programs?

Mr. BROWNLEE. Yes.

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Mr. McCALL. I can't think of any. Now, we have had a lot of Federal legislation which places responsibility on the States. I think as a general rule they have been provided with some Federal support. The OSHA program is an example, and also air pollution. We have some comprehensive health block grants money on environmental programs with very minimum support which goes into health departments. If we do not receive some relief, I cannot see, and we have talked with the members of the conference, how the States can possibly come up with the amount of money that will be needed for the scope of the program that is envisioned by this legislation.

I know of no one in our conference that argues to the contrary. In fact, they are quite vociferous in supporting this position. That is, thee position we have presented relative to the need for some financial assistance on state programs.

Mr. BROWNLEE. Dr. Dworsky?

Dr. DWORSKY. I would like to make comments, and I think Mr. Gilbertson has very important comments to make on this point. There is no question about the fact that there is a great need for a State program grant passed in this field. For background, since 1935, when the Social Security Act was passed, and since that time, there have been general grants given to States. Over many, many years, the Federal Government has been providing grants to the States for water supply programs, not specifically, however, as a categorical grant, although we came close to that many times. Water pollution at one time was part of the general health grant program, like the State of Michigan, for example, Mr. Chairman, but when the Water Pollution Control Act was passed, the Congress made a categorical grant of $1 million at that time, which was 1948.

It seems to me if there were to be a question posed to the public and you were to ask the public, "Shall there be some modest amount of funds available, no matter where it comes from, in order to help to develop a program to assure them of a purified and safe water supply?" The answer has to be yes.

Mr. GILBERTSON. I have made some reference already in my statement to this, pointing out that I don't think a levy mechanism will work. On the positive side from the standpoint of the need for the grants, I think that it is a little bit like the old saying, "You put your money where your mouth is."

If there is a real intent here to upgrade in a national sense the total program, the Federal program, the State program, the local program, then I think that it is pretty obvious we are going to have to put some funds in it to do it. These are things you can't possibly do without staff. You have to operate laboratories, you increase the number of surveillance inspections that are made.

In our State, we try to make at least one inspection per year of every public water supply, and some of the big ones we are making two, and some of the smaller ones we may not even get to once a year. We would like to do this about once a quarter. This increases the staff by double or perhaps triple what it is now.

I think that the problem that we are dealing with and going to deal with, with the State legislators, and this is something that is pretty close to me right now, is that we are going to our budget

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cycle just like the Federal Government is. There is a cross current demand here of all types of things, and it seems to me that generally speaking we have found that the legislators do respond when they see that the Federal Government is saying, "All right, we will put some money into this field. You do, too, and we will try to make a go of this thing together."

Senator HART. If there is no objection, let me ask you to continue with the questions, and I must go over and vote again.

Mr. BROWNLEE. Mr. McCall?

Mr. MCCALL. We are talking about a relatively small amount of money on a national basis. With the population we have in this country, we may be talking in terms of maybe 25 cents a year per person, and this is really not very much out of the public till, if you want to put it that way.

The other possibility that has been proposed, and on which we took a reading, was a proposal made in one of the past hearings of the use of revenue sharing for the State program grants.

Mr. BROWNLEE. I might add that that objection was not raised today by Mr. Fri.

Mr. MCCALL. That question was not raised today, but we will raise it, because I fugured you were going to ask me, anyhow.

We discussed this in our San Francisco meeting, and since then I have talked to a number of States to see what their experience is.

The experience we have so far in revenue-sharing is that there is none of this money being used for this purpose. The expectation is indeed low. We have for years tried to compete with the political and social requirements that face us on all public funds, whether they be appropriated by the legislature or whether they be by the Federal Government, and public water supply, does not compete well. Today I can give you a reading of what we do in our State, and I will give you a general statement on it.

Most revenue-sharing money right now that goes to the States, and I am not talking about what goes to local communities—what goes to the local community is determined by them—but what comes to the State is generally going into improving educational programs, improving social programs, building bridges, building highways.

Some of its is going into building sewage treatment plants.

We don't find much indication of it going into public water supplies, no indication of it going into operating State regulatory agency surveillance program, and no real anticipation that it will.

Mr. GILBERTSON. I think I could add one word on this from the standpoint of how revenue-sharing funds are handled in the states. There are quite a few States in which the use of the funds is subject to the normal State legislative appropriation process. Really from the standpoint of program emphasis, it doesn't—relying on the revenue-sharing approach—that doesn't give you any special lever at all. It is right in a pot with everything else. So all the welfare problems and the education problems and all of them, they are in there against these funds just like they would be for the State money.

Mr. SYMONS. May I just add a comment for the record, to say that I agree with what the other gentlemen said, and amplify it by saying we in our organization recognize that the amount of research

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being done in this country in the water supply field is practically nil on the Federal level, State levels, and university levels, and even in the utilities.

It is absolutely essential to our future of water quality in this country that we have fundamental research. Furthermore, it is essential that there be good surveillance programs by the States, and we know they are not being able to do what they should do today, and the only way to do these two things is by Federal grants.

Dr. LEHR. I would like, without beating a dead horse, Mr. Brownlee, to comment on what was said this morning. I thought the argument against State grants was a most persuasive one, but I don't think it will work. It hasn't worked in any other area, certainly not in the area of trying to force cities to clean up their wastes and sewage, by giving responsibility to State and local government. When the money isn't there, the people watch the sewage run out in the river.

I think while Mr. Fri's rhetoric was excellent, the chance of his plan working is slight.

Mr. BROWNLEE. Colonel McCall, on page 5, you indicate the need for improving the regulation of semi-public water supply systems is not questioned, and I think that has been borne out by a majority of the testimony that we have heard today. You say that it should be considered a State and local problem, and yet with respect to community supply systems, you stated on page 4 that program grant money is essential if proper regulation is to take place. I think all the witnesses at this table agreed with that proposition in response to the last question.

My question is this: If program grant moneys are essential for the State regulation of traditional community water supply systems, why is it not also essential for the proper regulation of the semi-public systems? If we are in dire financial condition with respect to the regulation of other water supply systems, why aren't we in the same boat with respect to semi-public water supply systems?

Mr. MCCALL. Semi-public water supply systems in most States are under surveillance of the local health departments. The local health departments aren't flush with money either, but they manage to carry out at least the beginning of a program.

As Mr. Gilbertson stated a few moments ago, if program grants are made available for community water supply programs, this lessens the pressure on State agencies which are now trying to cover everything with very limited resources.

I think my testimony indicated that as a first thrust, or as a first step in a national water supply program, we recommend we confine it to community water supply systems, for several reasons:

One is the ability to recruit and place people on the job.

Second, we will reach a greater number of people when we confine most of our real intensive activity to a community water supply program. This doesn't mean we are going to forget the others. We ha-haven't forgotten them, because we consider them highly important, but they do not take the effort that our community water supply program does.

Mr. BROWNLEE. You feel confident that the States and the local governments can raise the $60 million or some portion thereof, that

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which is not being spent now, and that they can raise that money and do an adequate job of policing these types of systems?

Mr. McCall. Raising $60 million? I really can't respond to that, Mr. Brownlee.

In the first place, I don't know what they are spending now nationwide. This is a difficult figure to come up with. We know what the State agencies are spending which is in excess of $10 million today. In 1970, I believe it was, they spent $10 million on public supplies, or community water supplier programs.

The State agencies are also spending money, or semipublic. But I can't give you that figure. I just don't know.

I think Mr. Gilbertson might have something to add.

Mr. Brownlee. Nonetheless, we all agree that improvement is needed.

Mr. McCall. Oh, yes.

Mr. Brownlee. I think most students of local financing would agree that it is more difficult for a county to raise money than it might be for the State. For that reason, at least to staff, it seems eminently sensible to give help for surveillance of these systems as well.

Mr. Gilbertson. I would like to add a little bit. I think this will vary somewhat State by State.

It just happens in my particular State only five of the major population centers are covered by full-time local health departments, so that the majority of the water supplies in the State, public and semipublic, are directly under the State.

So we would—any funds that would come in through a program in our State would be applicable to the so-called semipublic supplies.

The other thing that I should like to mention, and I think probably Mr. McCall would agree, is that even in a State where the local department which is exercising, we will say, the primary responsibility over the semipublic supply, that the State still has a backup responsibility, and a program review responsibility to be sure that this is carried out on an adequate basis.

This is the way we work, and we carry out an annual program review that I mentioned to be sure that the so-called delegated responsibilities that they are carrying out and have is being carried out adequately.

This includes an actual check on the staffing, sample inspections, something in the lab and these sort of things.

Again, I don't think we are doing the kind of a job that I would like to see us do, but the point I wanted to make here is that there is some variation among the States depending on the local government structure and the State-local relationships.

The other is that I think in every State there is a backup responsibility that would, we will say, if not directly, strongly influence the way in which this semipublic supply program would be carried out if there were sufficient funds provided to do this.

I think that would be my point.

Dr. Dworsky. I think one can't argue with Colonel McCall's program logic with respect to how an operating agency would approach this problem, but it does seem to me that we haven't stated adequately the modern problems of the mobility of people.

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Now, the national defense highway program, the automobiles, shorter work weeks, the recreational demands of individuals; we are all familiar with what this means in terms of people moving. And I expect we have whole cities, certainly small cities, moving every weekend during the summers, and it does seem to me that—and I am not arguing with this program logic, but nevertheless there is a problem that has to be faced.

What the answer to that problem is in terms of being able to assure this traveling public, these families that are all going together, that whenever they are staying in the major locations that they are assured of an adequate water supply, it seems to me we must not overlook this question.

Mr. McCall. In respect to Dr. Duorsky's comments, I agree with him absolutely and I believe, from my understanding of the testimony this morning, the thrust of EPA in implementing the paragraph in the Senate bill whereby they will make a judgment as to which ones of the systems would not have to be covered, was primarily directed at this traveling public and to the total population being served.

I think any self-respecting State agency would do the same thing.

You put your priority where you protect the most people. I wouldn't argue against this, and we certainly agree with this.

The thrust in our testimony on program grants is this: that the Senate bill as presently written really does not provide enough program grant support to even meet a community water supply program, and in order to meet the total program which the bill is intended to meet, the traveling public, the semipublic water supplies, instead of $40 million let's talk in terms of $100 million.

Mr. Brownlee. But you are asking us at that point in your testimony to give you the money to regulate the semipublic systems without including them under the umbrella of Federal regulation.

I think that would be a tough pill for Congress to swallow.

Mr. McCall. What we say is if you include them under the umbrella, provide the support. I believe we suggest that a phased program——

Mr. Brownlee. Agreed. And I think in the report on the legislation last year, a phased program was discussed, and it is my impression that the committee would be inclined to look with favor on some kind of support if we are going to include it under the umbrella.

Now, I think your testimony indicates that probably the program grant section of the bill is deficient in that respect now, and I think the questioning by Senator Stevens of the administration's witnesses was to find out how much money they were talking about.

It seems that conceptually we are together.

Mr. McCall. If you see any similarity between the figures that Mr. McDermott and Mr. Fri gave, they came from the same document.

Mr. Brownlee. I understand that. And your figures, if I understand them, provide for no exemption. The maximum $60 million that you cite in your testimony provides for no exemption.

Mr. McCall. That is right. It is 200,000 systems.

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Mr. BROWNLEE. We want to find out how many will be exempted.

Mr. MCCALL. I think there is room in here, as I think Mr. McDermott mentioned—I recall their evaluation on it was maybe 30,000 systems would be the ones that they would certify as being covered, or those that would have to be covered. That would be $10 million, roughly.

Mr. BROWNLEE. Right, $300 per system, and 30,000 systems comes out to $9 million. Two-thirds of that is $6 million.

Mr. MCCALL. Yes, as far as the program grant is concerned.

Mr. BROWNLEE. Dr. Lehr, in your testimony you dealt at length on the ground water problem. Federal Water Pollution Control Act amendments were passed last year, and there has been debate about the extent to which those amendments deal with ground water pollution and waste well injection. Could you give us a capsule of what your understanding of the present control is?

Dr. LEHR. It does give a certain amount of responsibility to the States regulating the disposal of waste underground.

It leaves tremendous loopholes for the oil and gas industry with regard to injection of oil and gas. For the most part, anything they take out, they are in control of putting it back into the ground, and very frequently we can end up with deleterious material going out of one horizon and going back in another horizon that would pollute water supplies at some later date.

In addition to this loophole, the amendments do not speak at all to the regulation of any excavations that tap ground water as water supply, and here we are dealing specifically with the regulation of the well construction industry which in two-thirds of the United States is allowed to go about its business basically uncontrolled. A third of the States have reasonable regulations.

What happened in that bill, I believe is that the oil and gas industry not wanting to be regulated, pressed for little or no underground regulation. I am not in any way condemning the oil and gas industry. I think by and large they do a fairly good job regulating themselves. Certainly they do not want to pollute ground waters, but I think they were overly fearful of being regulated in such a way that their costs of production would go up. In applying pressure to minimizing this effect they caused the elimination of very general language, so that the regulation of ground water is addressed very loosely and it is thus anything but a true mandate to the States to control a wide variety of waste from which the underground waters can be polluted.

All the States are beginning to develop deep well waste disposal specifications, but the pollution potential is far beyond the few industries which are going to construct a proper well to put wastes underground. It is broader than that.

Since 50 percent of the people in the country are drinking ground water, we have a resource that it behooves us to try to protect at the source before we have to do more work to clean it up when it gets to the tap.

Mr. BROWNLEE. You suggested that at the very least in this legislation we ought to make some provision for a study. I assume you are talking not only of the extent to which Federal regulation now

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takes place, but the nature of the contamination, and the nature of State regulations and related issues.

Could I ask that you and I be in touch in the near future to discuss that further?

Dr. LEHR. Definitely. The language I preferred was in the 1972 Rogers bill in the House, language which I think I had a good bit to do with putting there.

Mr. BROWNLEE. Is there a study provision?

Dr. LEHR. The regulatory language was pulled out and in place of tit was put a study provisions and it was very clear they wanted the study concluded and recommendations made to the Congress within 1 year. While I spoke against it because I was sorry to see that the regulations were pulled out, I have to commend the House committee in putting in something that will get the ball rolling.

I think it is a little late. It can easily be done in a year. I think we know most of the answers.

I would be happy to work with you and see if we can get language that equals that of the House.

Mr. GILBERTSON. I might add that the Ohio River Commission, which is an interstate compact and includes eight States in the Ohio River, and they call it ORSANKO for short, and they have been conducting in the past 12 to 18 months a kind of survey of waste water injection activities within that basin.

Now, I can't speak to how far it covers the gas and oil industry, but it covers all industrial type wastes, and we were just at an ORSANKO meeting last week and the staff there has a report which I am sure could be made available to you if you wish.

It was interesting to me that the use of waste water, underground waste water injection systems was decreasing in the Ohio basin.

We had about six of them, I think, in Pennsylvania, and they are all stopped now. That is for both regulatory reasons and for operating reasons. They have had a lot of operating problems with them.

Dr. LEHR. In case it isn't obvious to the committee here why the Ohio River Basin Compact would be interested in ground water, the reason is that much of this waste injection into the ground, ends up in the river at a later time.

Dr. DWORSKY. I wanted to make further note on the rural water supply study section—the rural water supply study in a section of your bill—and to suggest that this is a very important matter that hasn't been given enough attention by all of us, including the so-called water supply industry, the American Waterworks Association, the universities, and the government as a whole.

We have left in the backwash the rural people in the United States with respect to assisting them in a much more forceful way in developing those systems that may serve a large number of people if they were adequately developed and the technology was sought and the State and local opportunities for helping them to get established were developed.

So I commend you on that particular point.

Mr. BROWNLEE. Gentlemen, thank you very much.

If there is anything in conclusion that any one of you would like to say, we would be happy to hear it.

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Mr. GILBERTSON. We thank you.
Mr. BROWNLEE. Thank you very much.
[The statements and information referred to earlier follows:]

STATEMENT OF DR. JAY H. LEHR, EXECUTIVE DIRECTOR OF THE NATIONAL WATER WELL ASSOCIATION

Chairman Magnuson, members of the Senate, it is a pleasure once again to be honored with the opportunity to testify before this outstanding committee on a subject of such critical importance to our country. My testimony on America's drinking water supply problems given before you on March 20, 1972, is a matter of record. I have also testified on this subject before the House Subcommittee on Public Health and the Environment on May 26, 1971, June 8, 1972 and again most recently on March 8, 1972. Other statements of mine have been most graciously quoted in the Congressional Record of the House of Representatives on April 26, May 4, and May 5, 1971, and October 10, 1972.

Thus, my position and that of the National Water Well Association and the 100,000 men and women involved in the ground water supply industry, which I represent, is clearly a matter of record which I will make no attempt to repeat at the cost of your most valuable time.

Let it suffice to broadly summarize all past statements by lending our full support to the efforts of this committee in attempting to bring landmark legislation to the United States in the area of protection and improvement of one of man's most critical requirements, namely, drinking water. It has been an uphill battle for three years, but with broad support from the Congress and the Administration, victory finally appears at hand.

Let me use my allotted time, however, in what will hopefully be a most constructive manner by pointing out two areas in which I consider this bill to be weak.

Specifically the bill lacks adequate direction in:

(1) Ground Water Protection
(2) Organizational Structure for Implementation

Expanding on the first point, we believe the 1973 Safe Drinking Water Act should address itself to the task of insuring the continued purity of our Nation's underground water supplies in the face of expanding ground water pollution hazards and practices. This committee must recognize that the 1972 Water Pollution Control Act attempted to, and eventually succeeded in, sidestepping this issue and that with nearly 50% of our drinking wate now coming from underground sources it would be foolish to promote better drinking water at the tap without protecting it at the source. It is thus disheartening to find strong language allowing for control ans surveillance of our ground waters missing from this legislation. Perhaps, the problem is one of committee jurisdiction. Perhaps we must draft a separate piece of legislation, but somehow this subject must be spoken to if improvement and protection of our drinking water is to be achieved. Without laboring this point I would like to see this issue summarized in the record of this hearing by entering into the record a comprehensive article entitled "Leaky Legislation" which appeared in the January 7, 1972, issue of The Wall Street Journal. This article clearly described weaknesses in the then pending Water Pollution Control Act which were never filled prior to its passage. Thus, a regulatory void in ground water protection still exists.

Our association is doing all it can to police itself. We have undertaken massive education programs in sanitary well construction. We have instituted voluntary contractor certification programs and promoted mandatory state certification programs. Finally, we are in the process of developing industry-wide construction standards under a research contract with the U.S. Environmental Protection Agency. We submitted an unsolicited proposal to EPA to do this work over a year ago. The proposal was accepted and a contract awarded by EPA and NWWA on May 2, 1972. The work is currently under way. The purpose of this contract is to provide, for EPA publication, guidelines for water well construction which will insure safe drinking water and protect ground water resources.

But we can't do it all. The federal government must play a leadership role in preventing our still relatively pure ground water supplies from falling into

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the disgraceful state of our Nation's surface water bodies which now resemble open sewers.

My second point of dissension with all legislation on drinking water deals with the consistent unwillingness of Congress to require or direct or even suggest to the Administration how its legislation can be best carried out. In my testimony of July 29, 1970, before the Subcommittee on Executive Reorganization and Government Research of the Committee on Government Operations United States Senate on the President's Executive Reorganization Plans Nos. 3 and 4 of the 1970 establishing the EPA I suggested that now was a time to remedy our previous low-profile posture toward the handling of drinking water problems. I pointed out that in 1969 we spent two million dollars on protecting our drinking water for people and over one billion on protecting our river water for use by fish. The testimony suggested for the first time the establishment of a visible, viable water supply office in the new EPA.

Well, it was not done, and now we find water supply buried as a single division among six divisions addressing water pollution in the Office of Air and Water Programs of EPA.

Both water supply and water pollution budgets have now been doubled so last year the federal government spent 4.5 million dollars on water supply problems and two billion on water pollution control, and, hence, we sit here three years later finally pushing for legislation which will begin to remedy our drinking water problems.

But, let me warn you that unless the Water Supply Office is brought up from the third sub-basement of EPA in a position with a view, the job may still not get done. In my testimony of March 20, 1972, before this committee I addressed the problem of functionalization versus categorization of EPA. I won't repeat myself except to say that unless EPA gets, in addition to this legislation, a mandate to treat our Nation's drinking water problems in a more categorical and less functional manner, I seriously doubt the ability of EPA to achieve the high-minded goals set forth by this august body in the legislation we are now considering.

Earlier this month I was called to testify before Congressman Jamie Whitten's Agriculture-Environmental and Consumer Protection Subcommittee on Appropriations with regard to the EPA budget for water supply. I was grateful for that opportunity to simply defend the present water supply budget against what amounts to proposed cuts in both manpower and financial support at a time when water supply problems are considered by everyone from Nixon to Nader to be at the top of the list of our environmental problems.

An excellent summary of the reason for this national concern is contained in an article entitled "Impure Tap Water a Growing Hazard to tthe Health of Millions Across U.S." by Gladwin Hill which appeared on the front page of the New York Times on Sunday, May 13, 1973. I would like to submit that article for inclusion into the record of this hearing as I believe it will be useful in focusing the attention of the committee on the water supply problem past, present and future.

It appears, however, that the present leadership of EPA is not in agreement with this national concern which makes it all the more important that the ultimate administration of this water supply legislation not be left loosely to the whim of or personal preverence of whomever may be then at the helm of EPA.

The complete regionalization of EPA further divides the authority and interest in water supply problems down to a most inefficient level. If only each regional water supply chief were placed under the direction of a federal office this new legislation could be implemented with far greater certainty. Without belaboring the point further, it is at the very least worthy of your consideration.

Finally, let me address specifically the Administration's new Drinking Water Bill entitled S. 1735. To say the least, the bill, while greatly appreciated by our entire industry, is a bare bones attack on the problem.

Its primary inadequacy is its failure to provide for research and training program grants outside of EPA. Vast improvements in our drinking water supplies will require research by the private sector of our scientific community. Catalytic money for universities and research groups is a must for this purpose. Tremendous free effort can flow through universities and professional organizations such as our own with the contribution of relatively few federal

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dollars necessary to generate interest. An example of this is NWWA's current specification contract with EPA in which approximately 600 technical man days of effort are being contributed by the Association at no cost to the government.

Of perhaps even greater importance will be training grants, without which many states will be hard pressed to improve their programs. Furthermore, someone is going to have to teach the state how to get training programs going. For this purpose, EPA's Water Supply Office will need an inhouse training staff to oversee state efforts.

This committee and those who addressed this subject in the House are to be complimented for the thorough treatment of necessary research and training in both HR 1059 and S. 433. Let us simply recognize that we must withstand any pressure from the Administration to minimize the contribution this legislation can and should make in these areas.

On the positive side, I would like to compliment the authors of this bill for including in it a directive to the responsible government agencies to conduct a survey of water supply and waste disposal needs in Rural America. Preliminary studies by the Commission on Rural Water, a nonprofit interdisciplinary water supply research group of which I am a member, has uncovered wide spread problems in Rural America which indicates that probably over 20 million Americans are existing without adequate supplies of drinking water. The Commission's recent report entitled "Water Supply and Waste Water Problems in Rural America" was just published in full as part of the House of Representatives' record of the March 8–9, 1973, Water Supply Hearing. The hearing record is entitled "The Safe Drinking Water Act of 1973" and is Serial 93–11.

The successful work already completed by the National Demonstration Water Project, funded by the Office of Economic Opportunity and directed by the Committee on Rural Water, has already prompted a major piece of special legislation aimed at closing the rural water gap. The bill I refer to is HR 5541, sponsored by Congressman Howard Robison of New York and Titled "The Rural Drinking Water Assistance Act". This important bill also calls for a rural water supply survey similar to that outlined in S 433 now under discussion.

At present, however, the House Safe Drinking Water Bills HR 1059 and HR 5368, the former sponsored by Congressman Paul Rogers et al. and the latter submitted by Congressmen Staggers and Devine on behalf of the Administration, do not address themselves to this especially critical, low income water supply problem. It is urgent, therefore, that the Senate speak strongly for retention of this important part of S 433 at such time as it reaches a House-Senate Conference Committee.

I have brought with me a brochure entitled "Closing the Rural Water-Sewer Gap" which effectively summarizes the water supply problems of low income residents of Rural America and the work that the Commission on Rural Water ahs undertaken to prove that the problem can be solved on a broad basis. I have brought copies for each member of the committee, and while I do not seek to have the brochure included in the record, I would like to mention that copies are available upon request from the Commission on Rural Water Clearing House at 221 N. LaSalle Street, Room 1507, Chicago, Illinois, 60601.

In conclusion, I am sure I echo the sentiments of our entire panel of water supply specialists in saying that I am grateful for the careful attention being paid by this committee to this important bill. It is a good bill addressing a subject in dire need of legislation, but as all bills it is not perfect and improvements can still be effectively made without loss of time before being presented on the floor of the Senate. I urge you, therefore, to give careful consideration to the points I have raised and those my colleagues will present during the continuation of our panel presentation. Thank you.

[From the Wall Street Journal, Jan. 7, 1972]

LEAKY LEGISLATION—AN ANTIPOLLUTION PLAN CONTAINS A BIG LOOPHOLE FAVORING OIL COMPANIES—UNDER BILL LIKELY TO PASS, FIRMS COULD STILL IMPERIL UNDERGROUND WATER SUPPLY—THE ROLE OF A TEXAS POLITICIAN

(By John Pierson)

WASHINGTON.—The oil industry has drilled itself a loophole in the clean water bill that Congress is due to pass early in its 1972 session.

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Down this loophole, some pollution-fighters fear, could flow enough contaminants to foul water and water-bearing rock in oil-producing states for centuries to come.

Oil's loophole is tucked away near the end of the pending Federal Water Pollution Control Act amendments in a harmless-sounding section called "general definitions." The section resembles the fine print on an insurance policy. Section 502(F) says that the term "pollutant," as used in the bill means "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes" and a lot of other dirty things. But it does *not* mean:

". . . water, gas or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil or gas production and disposed of in a well, if the well used either to facilitate production or disposal purposes is approved by authority of the state in which the well is located."

WHAT THAT PARAGRAPH MEANS

That's a lawyer's way of saying that while the federal government is going to crack down on other industries, it will let oil producers continue to dump all sorts of chemicals—some of them harmful to humans—as well as very salty water into the ground. Only the states are left to watch out for trouble, and by the oil industry's own admission, some states watch less sharply than others.

When carefully done, even environmentalists agree, these oil operations are safe. Carelessly done, they can poison, and have poisoned, well water and the rock formations through which water creeps.

Democratic Rep. Les Aspin of Wisconsin urged the House Public Works Committee to treat oil like other industries. "I don't want to change that (oil) process. I think the process is right," Rep. Aspin told the committee. "I just want to protect the groundwater in the process."

"You want to subject the oil and petroleum industry to regulation by EPA," snapped Rep. Ray Roberts, a Texas Democrat. The EPA is the Environmental Protection Agency, the federal government's antipollution arm.

The Roberts view prevailed. Just before the Christmas recess, the committee, 31 of whose 37 members hail from oil states, okayed the bill, loophole intact. The full House will take up the legislation soon, and the loophole is expected to remain. The Senate passed a similar measure in November, 86-to-0.

"A LITTLE BIT OF WEAKNESS"

Oil's exemption was largely the work of another Texas Democrat, Sen. Lloyd Bentsen, and of industry representatives, including officials of the American Petroleum Institute. Ron Katz, Sen. Bentsen's pollution specialist, defends the exemption largely on the ground that oil wells are already regulated under state law, and oil industry spokesmen hammer on the same point.

"The states exercise extremely close control over the thousands of wells into which materials are injected," contends P. N. Gammelgard of the petroleum institute. "These states feel they have things in hand." He stresses that they require producers to get permits for injection operations and that they deploy hundreds of field inspectors to watch for trouble.

An EPA official says that behind the exemption for oil is "the presumption that the states are doing a good job." But he concedes that the exemption is "a protection of existing practices in oil-producing states" and "perhaps a little bit of weakness."

Groundwater, the stuff that Rep. Aspin wants to protect, is the water beneath the earth's surface that supplies wells and springs. There's more water underground and than on the surface in the U.S., and groundwater is usually purer than surface water.

According to Jack Keeley, an EPA water expert, about 20% of the nation is entirely dependent on groundwater. About a third of the 100 largest U.S. cities get all or part of their drinking water from wells. Nine of 10 rural families drink groundwater. More than half the water used for irrigation and livestock comes from underground. Industry consumes more than seven billion gallons of groundwater a day.

Unlike surface water, groundwater once polluted stays polluted long after the source of contamination has come under control, Mr. Keeley told a Senate

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Public Works subcommittee. "The restoration of a polluted groundwater resource is very expensive, very lengthy and very difficult," he said.

"POLLLUTED FOR CENTURIES"

In its report on the antipollution bill, the Senate Committee said that polluted groundwater, because it lacks living organisms and flows slowly, "could remain polluted for centuries."

The loophole in the bill exempts a number of oil operations from the kind of federal-state supervision that other industries will face. In drilling a well, for example, oil men lubricate the drill bit with "muds," which can contain phosphates, caustic soda, formaldehyde and other chemicals. Once a well is drilled, oil geologists explain, they may pump hydrochloric acid down it to enlarge the little spaces in the oil-bearing rock. Often, when a well appears to have stopped producing, they'll force oil, gas, water or chemicals down to flush out more oil.

Finally, when a well is deemed dry, it may be used for disposal of the brine that often comes up a well along with oil. Oil-field brine is a lot saltier than sea water and may contain lithium, potassium, bromine, sulphur and iodine in amounts that exceed acceptable levels for drinking water.

Oil men used to get rid of brine by putting it in evaporation pits on the surface. But according to Mr. Gammelgard, state officials saw long ago that this was fouling lakes and streams. Many states then told oil producers to put their brine wastes deep underground. Now, each day some nine million gallons of brine are pumped into 40,000 wells.

These methods of producing oil and disposing of brine are recognized as useful and legitimate. The EPA's Mr. Keeley told the subcommittee that all other ways of getting rid of brine are "less satisfactory." David Evans, a geologist at the Colorado School of Mines, recently wrote that injecting brine back into the rock formation from which it came helps keep the ground above from sinking.

Nevertheless, these operations risk polluting the groundwater, environmentalists say. Brine, acid, chemicals and other things are pumped down wells under great pressure to force them out into the rock formations at the bottom. In most places, groundwater lies at a shallower level than oil and is separated from it by layers of impenetrable rock. Still, when an oil well is improperly constructed or when the tubing gets rusty, pollutants can escape into the groundwater on their way down to the deeper oil layers.

Because groundwater moves so slowly, it may be a long time before pollution shows up in a water well—20 to 30 years, according to Jay Lehr, executive director of the National Water Well Association.

SOME ACCIDENTS

Some oil men pooh-pooh the danger. Rep. Roberts of Texas told the House committee that "there is no way" leaks could happen "in any of the reasonable oil-producing states." Wilson Land, director of the Petroleum Institute's committee on exploration, said that each of the nation's 33 oil-producing states regulates brine injection. But in some states, he conceded, regulation "is probably not as stringent as in some of the other states."

And accidents do occur. In a statement submitted to the Senate subcommittee last year, the National Water Well Association said that "instances of water pollution . . . have been reported in operations involving injection of oil-field brines." EPA experts say brine has polluted groundwater in Texas, Kansas, Arkansas, Ohio, California and Oklahoma.

According to a U.S. Public Health Service study, about 10 brine-injection failures are reported to Kansas state authorites each year. Ralph O'Connor, a geologist with the Kansas Board of Health, says there have been "some instances" of groundwater pollution from brine injection wells, usually older wells that lack an inner tubing providing extra safety.

Mr. Evans of the Colorado School of Mines reports that injected brine has erupted from the ground "like geysers" in Michigan, Texas and Kansas. He quotes Frank Counselman, past president of the American Association of Petroleum Geologists, as saying that water injected underground for any purpose is "a prime source of trouble."

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Mr. Evans of the Colorado School of Mines reports that injected brine has erupted from the ground "like geysers" in Michigan, Texas and Kansas. And Frank Conselman, past president of the American Association of Petroleum Geologists, while stressing that underground injection of brine is safe if properly done, says the process can cause trouble if precautions aren't taken to insure that the brine gets to its destination. Monitoring is essential, he adds.

AN AMBIGUOUS APPROACH

Despite these warnings, Congress' approach to the groundwater problem has been ambiguous at best.

Acting on behalf of the Nixon administration, Republic Sen. John Sherman Cooper of Kentucky introduced a bill that would have set up a program of federal-state water quality standards for groundwater as well as navigable waters. The Senate Public Works Committee rejected this approach because "the jurisdiction regarding groundwaters is so complex and varied from state to state."

Both the pending Senate and House clean water bills establish a federal-state system of permits for the discharge of pollutants "into the navigable waters" but not into groundwater. In the next breath, however, both bills says that the permits must "control the disposal of polluants in wells"—to protect groundwater, according to the Senate committee's report.

And elsewhere the legislation requires the EPA to prepare programs for "eliminating pollution of navigable waters and groundwaters." It requires states and localities by 1974 to develop areawide waste-treatment management plans that control the "disposal of pollutants on land or in subsurface excavations . . . to protect ground and surface water quality."

The EPA is required to publish information on how health and welfare are affected by "the presence of pollutants in any body of water, including groundwater." and to issue information on how to control pollution resulting from "the disposal of pollutants in wells or in subsurface excavations."

This is bad news for chemical, steel, paper and other companies that have a small but growing number of waste-injection wells. They'll have to meet federal or federally approved standards. But the oil industry won't have to. For oil, the saving word is "pollutant"—defined as not including the stuff oil producers put in the ground.

STATEMENT OF DR. JAY H. LEHR, EXECUTIVE DIRECTOR OF THE NATIONAL WATER WELL ASSOCIATION

Chairman Whitten, members of Congress, it is a pleasure to be honored with the opportunity to testify before this learned Committee on a subject of critical importance to our country. The subject I refer to is the surveillance, maintenance, development, and enhancement of our Nation's drinking water supplies.

Overconfidence and apathy pervaded the public's attitude toward drinking water for most of the last 20 years. Common daily experience plus a current myth about the future falsely implied that the quality, safety, and adequacy of our water supply systems were above reproach. The myth I refer to can be stated as follows: "Everyone knows we have launched a massive water pollution control effort and that waterborne disease outbreaks are a thing of the past."

We know now that statement is simply not true—countless waterborne disease epidemics have been laid bare across the front pages of our newspapers in recent years, topped most recently by the typhoid epidemic in Homestead, Florida, and the concurrent Maimi Beach water supply problem.

President Nixon himself, in his message on the environment delivered last February, highlighted our drinking water problem as a top priority issue. Thus, this Committee's decision as to the support the Environmental Protection Agency should and must give to its Water Supply Division is truly the first crucial step in improving a rapidly worsening situation.

After serving nearly 10 years as a college professor dealing with water supply problems, I took over my present position as Executive Director of the National Water Well Association which, as a professional society, aims to pro-

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vide scientific education, standards, and research in order to improve sanitary methods of developing our Nation's vast underground water supplies and thus advancing the science of ground water hydrology.

NWWA represents the entire underground water supply industry in the United States as well as members in 52 foreign countries. Among our members are numbered the country's leading ground water geologists and hydrologists, its water well drilling contractors, as well as the manufacturers and suppliers involved in ground water supply.

Seventy-seven percent of all municipal water supply systems are served by wells bringing underground water into our homes. Another 12 million families are served by individual ground water systems. Therefore, the 100,000 plus individuals working in ground water supply are deeply involved in the process of bringing pure drinking water into the homes of the American public. Through research projects being carried out by the National Water Well Association Research Facility, under the auspices of the U.S. Department of Interior, the Department of Health, Education, and Welfare, and the Environmental Protection Agency, we have come to the clear realization that a tremendously improved national drinking water supply program is needed.

I need not dwell on the serious scientific aspects of this problem as my thoughts are well documented in the records of Safe Drinking Water Hearings before the Subcommittee on Public Health and the Environment of the House Committee on Interstate and Foreign Commerce on May 26, 1971, June 8, 1972, and again on March 8, 1973. In addition, I delivered a comprehensive statement before the Senate Commerce Committee's Subcommittee on the Environment on March 20, 1972.

In these various earlier testimonies I acted in concert with virtually all other organizations representing the water supply industry in highlighting the needs of EPA's Water Supply Program. They were, and still are, the needs for (1) an identifiable federal program and office of water supply within EPA, (2) a legislative base to work from, and (3) the financial resources necessary to provide federal leadership in assuring the safety and adequacy of our drinking water. The activity is vital to each of us in order to assure good health for all our citizens.

The drinking water problems of this Nation, as well as the functions and responsibilities of the Office of Water Supply, constitute one of the least understood environmental problem areas, and thus presently constitutes a major program void which has developed from a previously disorganized approach to the environment.

The water supply industry had hopes of being led out of chaos when EPA was but a gleam in President Nixon's eye. In my testimony of July 29, 1970, before the House Subcommittee on Executive Reorganization which was studying Executive Reorganizaton Plans Nos. 3 and 4 of 1970 establishing EPA, I suggested that then was the time to remedy our previous low-profile posture toward the handling of drinking water problems. I pointed out that in 1969 we spent two million dollars on protecting our drinking water for people and over one billion dollars on protecting our river water for use by fish. The testimony suggested for the first time the establishment of a visable, viable water supply office in the new EPA.

Well, it was not done, and now we find water supply buried as a single division among six divisions addressing water pollution in the Office of Air and Water programs of EPA.

From a legislative standpoint, Congress has finally taken action by addressing considerable attention to the water supply problem. Safe Drinking Water Acts were drafted by Congressman Robison in 1970, Congressman Rogers in 1971, 1972, and now again in 1973 presently numbered HR 1059, and by Senators Hart and Magnuson in 1971 and 1972. Their 1972 bill, S 3994, passed the Senate and has been reintroduced this year as S 433.

EPA, during this three-year period of Congressional activity, took additional time to study water supply needs and has now finally submitted their own legislation entitled HR 5368 introduced recently by Congressmen Staggers and Devine.

In anticipation of favorable legislation passing both the House and Senate this year, some thought should be given to funding programs which will result.

In an effort to place the issue of proper budgetary support for EPA's Water Supply Division clearly in focus, let me refer you back to the record of the

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House Hearing on the 1971 Safe Drinking Water Act before Congressman Rogers' Subcommittee on Health and the Environment.

In a table appearing on page 521 of that hearing record Mr. Ruckelshaus displayed figures showing that EPA had been supporting its water supply effort in fiscal 1971 and 180 positions and 2,837,000 dollars. Mr. Ruckelshaus projected and proposed that in fiscal 1972 water supply positions would be increased to 206 and the budget increased to 4.6 million.

It is disturbing to me, therefore, to find that though Congress authorized those proposed funding and support levels for 1972, presently in fiscal 1973 the Water Supply Program is back to 4.1 million dollars and between 170 and 175 positions. What happened to the additional 30 positions and 500,000 dollars?

I am further confused by the wording which appears on page 69 of this Committee's report on the 1973 Agriculture-Environmental and Consumer Protection Appropriation Bill wherein this Committee approved a request for $4,093,500 in water hygiene on water supply spending for fiscal 1973. The report stated that this request was $37,600 below the amount available for fiscal 1972, but that these funds would provide for a continuation of the 1972 level of effort. I would certainly like to know how anyone expected 99 cents in 1973 to accomplish what one dollar could not do in 1972. This decrease in funding coupled with inflationary pressures must have the effect of reducing, rather than maintaining or expanding, our attack on American water supply problems and the protection of public health against situations such as that which recently arose in Miami, Florida.

Of even greater distress is Mr. Ruckelshaus' comments before this Committee a few weeks ago when he was asked by Congressman Andrews to explain why a decrease in funding of EPA's Water Supply Program was planned. Mr. Ruckelshaus replied that no such decrease was anticipated, but that 1974 funding would remain at the 1973 level. But, the record is clear that Mr. Ruckelshaus called for 4.6 million and 206 positions for water supply in 1972 and is now satisfied with apparently 175 positions and just over 4 million dollars in 1973 and 1974.

This type of planning clearly ignores the critical needs documented by governmental and private studies of the problem as well as the President's request that our water supply problem be considered a top priority.

On page 15 of your report on the 1973 Environmental Appropration Bill you focus serious attention on the need to clean up the Nation's streams, but you must recognize that such a cleanup, to which billions of dollars are being directed, will not assure safe drinking water at the tap. Both surface and ground water systems must be properly installed, maintained, and treated before we can hope for adequate safe drinking water.

Grover

On page 57 of that report this Committee recognizes the tasks required of EPA under the Federal Water Pollution Control Act, but it must be pointed out here that pollution control requirements do not include a water supply responsibility. On that same report page your Committee recognizes the functional approach which EPA has found necessary to use in administering the diverse legislation and complex tasks which come under its purvue.

Unfortunately, this same functional approach is what has buried a 4 million dollar water supply division in the third subbasement of EPA below six divisions charged with spending billions of dollars to attack our surface water pollution problems. Something must be done to insure that EPA gives the Water Supply Division a place in the sun where it can work effectively on our many critical water supply problems.

This Committee, as reflected in its 1973 Appropriation Report, does indeed appear to be clearly aware and sympathetic to one area where the water supply problem is most critical, namely, that of rural America. A 1969 Community Water Supply Study released by EPA, an unpublished Farmer's Home Administration Survey made in 1970 and referred to in the recent report from the National Water Commission, as well as statistics uncovered in the 1970 Census, all point to the fact that over 20 million rural Americans are without adequate drinking water facilities.

In an effort to highlight this dire need, the Commission on Rural Water, which grew out of a series of most successful National Demonstration Water Projects in Virginia, West Virginia, Arkansas, South Carolina, and New Mexico sponsored by OEO and supported by the Farmer's Home Administra-

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tion, recently completed a comprehensive report on the subject entitled "Water and Waste Water Problems in Rural America." The entire report was made a part of the record of the hearings of March 8 and 9 before the House Subcommittee on Health and the Environment on the 1973 Safe Drinking Water Act.

This comprehensive report showed clearly that small community water supplies have the most serious problems—problems which reduce health and impede economic development. These systems can best be helped by a federal program sensitive to the needs of politically powerless groups.

The fact of inadequate water and wastewater facilities in rural areas is due both to the nature of rural life and its geographic spread and to an inadequate national delivery system hampered by increased pollution of water supplies and the general shift of human and financial resources away from rural areas. The system is weak because there is no national commitment to providing rural America with basic sanitation services, because financing is not available to those who need it, because the local residents know not how to mobilize in order to get adequate funding, and because little attention has been paid to solving the local technical problems of rural areas.

The Commission on Rural Water, made up of private and public consultants and contractors, has overseen five major National Demonstration Water Projects aimed at solving the aforementioned problems.

Not only have they succeeded with low cost, practical development in the field, but they have written three major textbooks to be released later this month which will hopefully spread the required knowledge needed to establish local organizations capable of overseeing the construction and maintenance of rural water and wastewater facilities throughout the United States.

The Commission on Rural Water will likely function as a pilot program center for only another three years during which time it hopes to (1) develop an adequate structure for field activities, (2) gain acceptance for technology and methodology more specifically related to rural requirements, (3) obtain a political mandate for a national effort to enable rural residents to obtain adequate water supply and waste disposal services, (4) improve the process for financing community efforts to obtain water supply and waste disposal services, and, finally, (5) to educate consumers as to the nature of the service they require, the important role they themselves play in providing that service, and how they might obtain needed assistance.

In an effort to thoroughly explain to this House Appropriations Subcommittee the tremendous strides that have been made by the private and public sectors of our country working in concert while at the same time pointing out that this alliance cannot ultimately succeed without a major federally sponsored effort in the same direction, the Commission on Rural Water has written a brief report entitled "Closing the Rural Water-Sewage Gap." With your permission, I would like to submit a copy of this report for inclusion in the record of this hearing to give documentary support in greater detail to the strong request we wish to conclude with here today.

That request deals entirely with what continues to be considered an apparently small and inconsequential drop in the EPA bucket, namely, support of the Water Supply Division of the Office of Air and Water Programs. In spite of a favorable attitude of Congress regarding Safe Drinking Water legislation, EPA appears to be regressing in its interest in supporting, expanding, or in fact even maintaining the necessary effort in the water supply area. The Congress, therefore, should also consider what must be done about funding the program and providing the manpower. I, the National Water Well Association, the ground water supply industry, the Commission on Rural Water, and more accurately perhaps the entire water drinking public, implore you at the very least to restore EPA's appropriation in the area of water supply to its own 1972 projection of 4.6 million dollars and 206 positions. And, if my testimony has truly made the significant impact which the facts deserve, we urge you to further increase the budgetary and manpower requirements to a level which you at your experienced discretion believe can truly begin the ominous task of attacking our Nation's drinking water inadequacies at a support level capable of narrowing the gap between what currently exists and what we know should exist rather than allowing the gap to increase annually due to ignorance and apathy.

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[From the New York Times, May 13, 1973]

IMPURE TAP WATER A GROWING HAZARD TO THE HEALTH OF MILLIONS ACROSS U.S.

(By Gladwin Hill)

On March 8 residents of Miami Beach, Fla., were jolted by word from county officials that they had better boil their drinking water because contamination had been found in the supply system.

In the next week, two emergency chlorination units were flow in by the Air Force from Alabama and put into operation, and the water supply returned to normal.

The episode made headlines across the country, but it was no surprise at the Environmental Protection Agency's Water Supply Division—the closest, although admittedly inadequate, approximation of a national drinking water monitoring agency.

Division officials, along with many independent experts, say that despite the widespread assumption in space-age America that impeccable drinking water can be taken for granted, such deplorable conditions exist among the nation's water systems that there are countless places where a grave epidemic might occur any day.

POTENTIAL FOR TROUBLE

Outbreaks of disease from drinking water have in fact been occurring at a fairly regular rate of more than one a month, although only a few get national attention.

In 1964 there was an epidemic that sickened 16,000 people in Gainesville, Fla., in 1965, an equally big one in Riverside, Calif.; last year, one that hit 3,500 people in Pico Rivera, Calif.

Altogether in the decade 1961–70 there were 130 officially recorded waterborne disease episodes in the United States, involving over 46,000 illnesses and 20 deaths from such ailments as gastroenteritis ("intestinal flu"), hepatitis and typhoid.

The potential for such troubles has increased rather than decreased in recent years, and officials are hoping that perhaps even worse episodes do not occur before pending remedial measures can take effect.

Before Congress is legislation that would for the first time establish mandatory national standards of drinking water purity and would impose fairly severe penalties on anyone who flouted them—as is happending now in many if not most states.

The House of Representatives has held hearings on the legislation. Senate hearings are expected this month.

Some of the current conditions to which water hygiene experts have applied such adjectives as "shocking" and "horrible" are:

Only 15 states even purport to adhere precisely to U.S. Public Health Service drinking water standards.

Some 23 million people are probably drinking substandard water regularly from public water systems.

At least eight million people are getting what Federal officials call "potentially dangerous" water.

Upward of 500,000 people are currently supplied water that the Federal Government has banned from interstate commerce as hazardous.

Over half the nation's water systems are deficient, in Federal officials' judgment, in facilities, operations or competent personnel.

States are spending less than one-third of what Federal experts say they should be on regulatory programs to assure citizens of good water.

A CASE OF FALSE ECONOMY

The underlying reason for the Miami Beach scare, officials say, was false economy.

"The fact that the problem was solved by the installation of a couple of chlorination units," an official here remarked daily "rather speaks for itself."

The concurrent typhoid outbreak at a farm labor camp at Homestead, 20 miles from Miami, was of similar origin. The chlorinating unit broke down, as they inevitably will, and there was no adequate stand-by equipment.

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Florida, at the time of the last Federal check in 1970, was spending 2.5 cents a year per person on state activities to assure citizens of safe drinking water.

Federal experts say states should be spending 20 cents per capita annually for a "fully effective" program, in terms, mainly, of manpower. The average state expenditure in 1970 was 6.3 cents per person served by public water supplies. Altogether, the survey showed, the states were spending only $10-million a year instead of the requisite $32-million.

Even the maximum per capita expenditure—18 cents by New Hampshire—was below the Federal standard. The figure for New York was 8.9 cents; for New Jersey, 2.2 cents, and for Connecticut, 1.7 cents.

Robert Fri, then second in command at the E.P.A., testified before a Congressional committee this year:

"State and local control programs, because of deficiencies in their planning, training and enforcement activities, are not providing adequate regulation of local water supply systems.

"Many of the states are not capable of delivering water of acceptable quality because of their lack of adequate facilities and sufficient numbers of trained personnel."

Other observers have put it more strongly. A recent Federal survey, Dr. Jay H. Lehr, executive director of the National Water Well Association, told a Congressional committee, "clearly shows our drinking water supplies to be in horrible shape. The situation is disgraceful." His organization is the trade organization of the underground-water supply industry.

THE JURISDICTION GAP

Contrary to a widespread impression, the Federal Government now has no national jurisdiction over the purity of drinking water.

Its authority is confined to some 650 water systems that supply interstate carriers—planes, buses, trains and ships. These make up fewer than 2 per cent of the water systems serving the American public.

There are about 35,000 water systems. Thirty thousands of them are municipally operated, serving 130 million people. Some 5,500 are "investor-owned" systems, serving 40 million people. About 30 million people get their water from private wells. Twenty million have no household running water.

The U.S. Public Health Service in 1914 promulgated the nation's first drinking water standards, last revised in 1962.

They specify limits on the amounts of a dozen basic minerals water can safely contain; limits on bacteria; and basic criteria for the operation of water systems and for testing water.

But for most of the Country, these standards have remained optional. Only 15 states have adopted them unaltered as statutory regulations. Seven other states use them "with modifications." Most other states say they use them as "guidelines."

However, even where states ostensibly adhere to the standards, Federal officials consider this inconclusive because enforcement often is sketchy.

"ESTHETIC" CHARACTERISTICS

"The states are inadequately staffed and financed to have people to enforce the standards or know what they mean. They have fallen down in training very badly," says Dr. Lehr of the water well association.

Considered almost as significant currently as the basic purity standards are "esthetic" characteristics of drinking water—clarity, odor and taste—which also are widely unregulated. These, more than clinical factors, have been causing millions of people to shift from tap water to bottled water.

"The joke is," Dr. Lehr comments, "that bottled water has even less regulation and standards requirements than tap water."

Bottled water is under the jurisdiction of the Pure Food and Drug Administration, which long held that it could enforce only the bacteriological provisions of the Federal standards. A recent survey of bottled-water suppliers showed that their facilities or products were in many cases dirty, and the F.D.A. is now proposing to hold them answerable to the entire Public Health Service code.

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The Public Health Service's Bureau of Water Hygiene (transferred to the E.P.A. in 1970) was an underfunded bureaucratic stepchild during decades of mounting evidence of substandard drinking water across the country.

Finally in 1969 an energetic new head of the bureau, James McDermott, wangled funding for the first extensive survey of water systems in the nation's history. The survey's findings were published in 1970, and there has been no indication of any basic change in the situation since.

The survey covered 969 public water systems: The entire state of Vermont, and the systems in eight urban areas—New York, Charleston, West Va., Charleston, S.C., Cincinnati, Kansas City, Missouri-Kansas, New Orleans, Pueblo, Colo., and San Bernardino-Riverside-Ontario, Calif.

18 MILLION WATER USERS

The survey involved about 18 million water users, more than 10 percent of the nation's water system customers. Of these, 86 percent were found to be receiving good quality water, generally in the bigger cities.

But 41 percent of the 969 systems were delivering substandard water to 2.5 million people. Some 360,000 people were judged to be getting "potentially dangerous" water—meaning that adequate measures were not in effect to prevent users from being poisoned at any time.

Extrapolated to the 170 million served by meter systems, these figures were officially construed as indicating that as many as 23 million people might be getting substandard water, eight million of them "potentially dangerous" water.

Of the 969 systems, 51 percent did not put water through initial chlorine "disinfection" or final chlorination. Seventy-nine percent of the systems had not been inspected by state or county officials in the preceding year. Eighty-five percent did not do enough bacterial testing. Of 2,595 samples of household tap water taken in the survey, 36 percent contained contaminants exceeding the Federal limits.

Currently, Federal bans for interstate carrier use are in effect on systems in 25 cities that provide water to more than 500,000 people.

Classification of these suppliers is largely dependent on the diligence of state officials. The E.P.A. counts on them for regular inspections, with the idea of conducting joint inspections every three years. However, manpower, limitations have kept actual Federal participation down to more like once in six years.

"It's true," the E.P.A.'s James McDermott says, "that one of these interstate suppliers might be bad for months without Federal officials knowing about it."

Approximately half the nation's drinking water comes from wells, the other half from surface sources—rivers and lakes.

About half the customers of public water systems, says Dr. Daniel Okun, University of North Carolina environmental engineering professor, "use water part of which only hours before had been discharged from some industrial or municipal sewer."

COMPLETE TREATMENT

Water plants providing complete treatment take in raw water, clarify it, and disinfect it with chlorine. Then they mix in various chemicals to coagulate extraneous minerals, adjust the water's alkalinity, neutralize tastes and odors, and soften it. Then they add more chemicals to remove the corrective chemicals, filter the water, and chlorinate it for distribution.

Contaminants can get into the water at the source, in processing, or in distribution. The bugbear of water supply engineers is the "cross connection"—the possibility of intrusion of contamination in distribution lines through backflows, which can result from improper valving and sudden drops in pressure.

It was a "cross connection," in which sewage got into the pipes, that felled most of the Holy Cross College football squad with hepatitis at Worcester, Mass., in 1969.

Deep wells are often thought of as impervious to contamination, and chlorination accordingly is omitted. It was over-confidence on this score that caused the big outbreak of salmonellosis—a severe sort of "stomach flu" usually associated with tainted food—at Riverside, Calif., in 1965. How the germs got into the system has never been determined. But the introduction of chlorination quickly ended the trouble.

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The three commonest water contaminants are bacteria, viruses and chemicals.

Routine chlorination will kill bacteria. But viruses are another story. They are mysterious submicroscopic organisms of many strains that are believed capable of causing virtually the whole gamut of human ailments, from colds and some forms of cancer to hepatitus and heart disease.

Viruses are prevalent in human wastes and have been regularly found in more than one-third of random samplings of surface waters. There are indications they infiltrate ground water as well.

Viruses are resistant to chlorination, to an indeterminate degree. Last year, Michigan State University researchers detected some in the water of a restaurant whose 100-foot well had been certified by the state as safe.

E.P.A. researchers found viruses in the treated drinking water in two Massachusetts cities, Billerica and Lawrence. This was not considered an indictment of the systems, because scientists think viruses are probably in many systems, and no certain way of eliminating them, short of boiling water, is yet known.

"An estimated 40-million people," James McDermott says, "are exposed to the same conditions as exist in Lawrence and Billerica."

COAGULATION PROCESS

Laboratory experiments have indicated that the coagulation process used by some plants in clarifying water may remove as much as 99 percent of some concentrations of some viruses. But the residual 1 percent could be lethal.

And the 1969 survey indicated that only one water plant in six performed clarification.

Upward of 12,000 toxic chemicals are now used in industry, with hundreds of new compounds being added every year, and many of these find their way into water sources. Some have potentials for inducing cancer, birth defects and genetic mutations.

"Conventional drinking water treatment," says the University of North Carolina's Dr. Okun, "often fails to remove or significantly reduce the concentration of dissolved organic chemicals and heavy metals often present in waters drawn from polluted sources."

The current Federal drinking water standards are widely considered inadequate because they deal only peripherally with such chemicals, and take no cognizance whatever of viruses.

A scientific advisory panel has been working for several years on a new revision of the standards. But when it will be promulgated is uncertain.

DETERIORATION OF WATER

Along with the proliferation of intractable industrial chemicals, a number of other fundamental developments of recent years have tended to lower the quality of drinking water.

Booming urban populations have aggravated pollution of water sources. Pollution abatement, at the present stage, is not synonymous with drinking water improvement, because even recreation-quality water is considerably below bacteriological and chemical standards for drinking water.

Public pressures for pollution abatement have set local and state governments scrambling for funds, and one conspicuous place for "borrowing" is from drinking-water appropriations. Some communities still count on water charges to help out with other governmental expenses. Others have kept water rates unduly low to appease taxpayers and attract industry.

The big migration to new suburbs has propagated many small water systems that often are substandard. Thurston Larson, an official of the Illinois State Water Survey, says: "There are 500 brand new suburbs in Cook County (Chicago), just brand new in the last 10 years, and I don't think there are 10 percent of the personnel in them that are trained at all."

Finally, time and increasingly complex purification problems have aggravated the inadequacies of many water systems.

"Most of our municipal systems were constructed over 10 years ago," James McDermott says, "These plants were designed solely to treat raw water of high quality for the removal of coliform bacteria [organisms indicating sewage contamination]. Not enough was known to design a facility for the removal of toxic chemicals or virus contaminants."

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ACUTE PROBLEM SEEN

These limitations and deficiencies are seen as posing acute problems in coming years, when water shortages will necessitate direct recycling of sewage for public use.

While a few "advanced waste treatment' operations have been set up to refine outgoing sewage to meet drinking water standards, virtually none of the existing 35,000 water intake systems has such capability.

Medical people and chemical engineers are toiling at the problems of neutralizing viruses and "exotic industrial wastes. But such prospective advances do not promise to be much help until existing water supply systems can at least be brought into conformance with the existing elementary standards.

This is the objective of the pending legislation.

Two principal bills are before Congress. One is S. 433, sponsored by Senators Warren Magnuson of Washington, Philip Hart of Michigan and John Tunney of California, all Democrats. It would set up full-scale Federal enforcement, throughout the 50 states, of the Federal standards. The immensity of Federal policing of 35,000 water systems, along with 500 dealers in bottled water, is one reason the legislation has bogged down in previous sessions.

The other bill, HR5368, newly introduced by the Administration and sponsored by Representatives Harley Staggers, Democrat of W.Va., and Samuel L. Devine, Republican of Ohio, was formulated this year by the E.P.A.

It would resolve the enforcement problem by turning it over to the states with stringent sanctions if they failed to act.

It calls for the E.P.A. to devise national standards, the sets penalties for any suppliers who do not comply with them—a $15,000 fine and a years imprisonment for willful violations, a $10,000 civil fine for unintentional violations.

States would be required to establish regular surveillance and enforcement of the standards, with regular reports to the E.P.A., and to issue public notices any time violations were discovered.

A strong lever on the states is a provision for citizen suits. Liable to suit, whenever there is an apparent violation of the law, are water suppliers, state officials or even the E.P.A. itself.

As with water pollution and air pollution, the E.P.A. could intervene in a stat any time it considered public health jeopardized.

The Administration bill omits, as unnecessary Federal involvements, a number of features in the Magnuson bill. Among them are special bottled-water regulation; Federal standards for water system plant operation; mandatory "esthetic standards; $68-million in grants to the states in the next three years to help them develop adequate regulatory programs; grants for technical "demonstraion" projects, and establishment of a national drinking water advisory council.

Senate hearings this month are expected to produce a basis for reconciling the differing proposals in a Senate-House conference committee.

If the legislation passes, it will still take some time for the states to gear up their budgets, manpower and facilities to the prescribed standards.

That day cannot come soon enough for water experts, who feel as if they were living on an ever-growing powder keg.

"Its our over-all judgment, James McDermott says, "that the risk is getting excessively high.

Closing the Rural Water-Sewer Gap

INTRODUCTION

The goal of the Commission on Rural Water is an adequate water supply and waste disposal system for all rural Americans—and especially those with low incomes. Established in 1971, the Commission is an outgrowth of Demonstration Water Project (DWP), Roanoke, Virginia, a model project organized to develop methods and practices for providing rural residents with these essential services. Today, the original Roanoke project is part of National Demonstration Water Project (NDWP), which now includes four others in West Virginia, South Carolina, Arkansas, and New Mexico.

Commission membership comprises the NDWP field project directors; representatives from interested federal and state agencies, including OEO, EPA,

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Indian Health Service (HEW), and the Environmental Improvement Agency of New Mexico; and major program contractors, including Conset, Inc., the National Water Well Association, the Ground Water Council, and System Sciences, Inc. The variety of points of view on the Commission contributes to the realization of its objectives:

To mobilize all available resources, both public and private, to bring the seriousness of the rural water and sewer situation to the attention of a wider public.

To stimulate effective action programs to eliminate the problem within a reasonable period of time.

To provide local project agencies with sufficient organizational and technical assistance to insure their success. (This includes personal consultations and on-site surveys by Commission members and the publication of a wide variety of materials, such as a guide for local project development, a technical guide to water system development, and a guide to available technology and methods of wastewater disposal in rural areas.)

To develop a comprehensive self-supporting program for operation and maintenance of facilities based on successful NDWP practices which will insure the success of individual user-owned water companies.

The pages that follow describe the depth of the water-wastewater problems facing millions of rural Americans, what NDWP and the Commission on Rural Water have already done to help, and what they will be doing (and proposing that others do) in the years ahead.'

Doesnt Everyone Have Indoor Plumbing?

The assumption that most Americans have adequate sanitary facilities in their homes would probably be true if we looked only at urban centers of population. In rural areas it is far from being true; in fact, over twenty million rural Americans are without adequate facilities.

The 1970 Census reports, for example, that approximately five million rural residents have no water at all in their homes.

Seventy-five per cent of the population is served by public water systems. However, a recent survey by the Public Health Service of representative systems found that 41 per cent failed to meet its minimum Drinking Water Standards.

Almost 25 per cent of rural residents rely on individual water supply systems. Recent surveys of individual water supplies made under the auspices of the Environmental Protection Agency (EPA) suggest that they are in worse shape than community supplies. The results in three Southern states showed more than 40 per cent of all supplies contaminated. Modern drilled wells showed the least incidence of contamination, but 77 per cent of the dug wells and 85 per cent of the cisterns were contaminated.

An EPA study done in 1971 found that 70 per cent of the total population was sewered, but in rural areas the figure dropped to a little over 20 per cent. Most had septic systems (usually adequate if properly maintained) or cesspools (hardly ever adequate), but 15 per cent were still using privies or discharging sewage directly into waterways.

The same study showed that while 92 per cent of sewer systems had some sort of treatment, only 54 per cent had adequate treatment. When the unsewered population is added to those with inadequate treatment, this amounts to nearly 65 per cent of the total population. Because non-sewer disposal methods can be satisfactory, the number of persons with inadequate sewage disposal is not nearly this large. Exactly how many people have deficient facilities is not known since there has never been a survey of the adequacy of individual systems.

A 1969 study by the Farmers Home Administration identified over 30,000 communities with populations of less than 5,500 which needed new or improved water systems. The sewer study yielded similar results. The study did not even consider those areas where people could not be served by central systems.

Many other examples which indicate the current rural sanitation situation could be cited. The conclusion they all point to is that rural America still lags far behind urban America in these essential services.

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HEALTH EFFECTS

The consequences are far reaching. Health problems that are directly caused by contaminated water are the most visible. Between 1946 and 1960, there were 26,000 reported cases of water-borne disease in the United States, primarily gastroenteritis, shigellosis and diarrhea. Typhoid fever numbered 500 cases. In the 1960s, 46,000 people were affected with water-borne disease. In 1970, 3,500 cases of gastroenteritis were reported in California, directly attributable to the water supply. Several similar outbreaks occurred in Vermont. And in March, 1973, the Washington Post reported thirty cases of typhoid confirmed and more than seventy additional cases suspected in a migrant labor camp in Dade County, Florida. The camps two contaminated wells were identified as the cause of the outbreak.

Health problems caused indirectly by the unavailability of water are even more prevalent, as a study in one of NDWPs project areas reveals: " * * * the childrens clothes are usually dirty . . . the children . . . sleep in the clothes they wear to school . . .

"In the homes sanitary conditions are often deplorable . . . many people drink water from the same bucket using the same dipper; . . . they all bathe from the same tub of water; they often do not wash after using the toilet; injuries are not properly cleaned and result in serious infection; impetigo, which is very prevalent, cannot be adequately treated without safe water; dishes are often not washed . . . merely used again . . . teeth are not brushed . . . babies and young children often have serious cases of diarrhea due to contaminated water supplies; and so on and on . . . and on.

When you add to all of this the fact that no significant economic growth is possible in communities with inadequate water supplies and waste disposal systems, it is possible to see the direct relationship between the water-sewer gap and the decline of rural America.

GOOD NEWS

There are signs that the country is awakening to the problem. The Rural Development Act of 1972 provides for far-reaching programs in almost every area, including water and waste disposal. New water quality legislation appears likely in 1973. The Water Pollution Control Act will offer some help to rural communities for both central and individual waste systems. And the Commission on Rural Water is determined to mobilize all available resources to make certain that the new momentum doesn't slow and that those whose need is greatest will receive the highest priority.

Demonstration Water Project, Inc. in Roanoke, Virginia, was the forerunner of National Demonstration Water Project. It was funded by the Office of Economic Opportunity in 1969 as a unique federally-supported experiment to demonstrate how low-income persons might be assisted in their efforts to improve their water and waste disposal facilities.

Stock, at one dollar a share, was sold to low-income residents of the five-county Roanoke area, who then elected a Board of Directors drawn from each of the counties. A charter as a non-profit corporation was received from the state of Virginia, and the Board hired an executive director, long-time Roanoke resident, Joseph VanDeventer.

The Roanoke project started with the basics. A house-to-house survey of the five-county area was made to find families who had water needs. At the same time, Dr. Paul O. Woods of Hollins College, with the assistance of his students and local public health officials, was preparing a report on the environmental consequences of the poor water supplies in the area.

The survey found two thousand families with serious water problems, the root of the tragic waste of human resources that Dr. Wood described in his report. The first years effort involved 516 of these families.

At the same time, government agencies—local, state and federal—which were in a position to help the project were contacted. Since the Farmers Home Administration (FmHA), Department of Agriculture, was potentially the primary funding source for the new water companies, DWP concentrated its efforts in that area.

Four companies, with a total of 215 member families, were formed and received financing from FmHA and DWP for conventional central well and pipe line rural water systems. These companies are owned and operated by the

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users themselves. They are run democratically, electing their own officers and also members of the DWP board.

Thus, low-income people are not only organized to help themselves, but, through the DWP board, can assist others in obtaining needed water supplies.

TRAINING IS ESSENTIAL

Because most of those involved in company operations have no previous business experience, and because the companies are expected to function for at last the forty-year period of the FmHA loan, NDWP has developed a training program to insure the self-sufficiency of the companies. The underlying philosophy of the program is that it is possible to train well-motivated people to operate a company as a group even though no individual member of the group has all the capabilities required.

In addition to training, NDWP assists the companies in many other ways—with company organization, loan and grant application, technical assistance in facilities development, and construction supervision. It is anticipated that decreasing levels of assistance will continue for several years to insure the success of the new ventures.

STUMBLING BLOCK

While the Roanoke project met or exceeded every target set for it by OEO during the first grant year, it soon became obvious that many rural people lived in areas too remote to be served by central well and pipe line systems, the only kind then being financed by FmHA. Some method had to be found to provide them with adequate water service.

FmHA suggested that these people could be served through its 504 individual home improvement loan program. DWP soon found that the program had its drawbacks, at least in the areas they were trying to serve. However, in studying testimony before the House Committee on Agriculture regarding pending legislation, they discovered a never-implemented proposal of the water well/water systems industries that associations include individual and cluster wells where appropriate. Cluster wells are small systems which serve a few families from a single well but are joined together under central management in a single company.

DWP further found that the recommendation was accepted by the House of Representatives which included the following statement in its report: "The term 'project' shall include facilities providing central service or facilities serving individual properties or both.

Armed with this, DWP went back to FmHA with a proposal for the use of single-family and cluster wells for a water company in Franklin County. The Virginia office approved the idea and sent it on to Washington, where it was approved in principle in August, 1971.

Since then, the Franklin County company has been organized, an engineering feasibility study completed, and formal application for funding made to FmHA. Final approval is expected early this year.

Including small communities and scattered families in a centrally-financed association has several advantages. It allows their water or waste disposal facilities to be financed over the longer forty-year period of such loans, which reduces the amount paid per month from over $10.00 to less than $7.00 in most cases. Moreover, it allows users to get the benefit of central management and maintenance for their water system. Finally, and most importantly, it insures that all families who have a need can be served, regardless of where they live.

DWP ROANOKE—A SUCCESS STORY

The Roanoke projects program of organizational and technical assistance, extensive company training programs, and insistence on flexible systems design made the original demonstration project a conspicuous success. By the end of 1972, four companies were in full operation, three companies were funded and in the construction stage, and four companies were organized and awaiting funding. Nearly eight hundred families were involved in these projects. In addition, eight companies serving approximately five hundred families were in various stages of organization. Recognizing that DWP-Roanoke had convincingly demonstrated that its families could own and operate their own utility companies, OEO increased its funding early in 1972 to allow for expansion to a national program.

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DWP Goes National and the Commission on Rural Water Is Born

The NDWP proposal to OEO for the 1972 grant year included the formation of the Commission on Rural Water. It was to be a resource and advisory body with specific powers of concurrence to aid NDWP in the conduct of its new national program. Although the Commission met for the first time in March of 1972, it had an extremely productive year.

While the Commission itself does not approve new projects—this power resides in the NDWP Board of Directors—it performs many valuable functions in the selection process. Commission members are urged to suggest prossible new projects since their regular work brings them into contact with local groups which are active in the water and waste disposal fields. Individual members are then often asked to visit proposed project areas and report on their prospects for success. Finally, the Commission as a whole meets to evaluate a proposal and make its recommendation to the NDWP Board for possible funding.

WEST VIRGINIA CHOSEN FIRST

During the first year, the Commission and its staff evaluated numerous proposed project areas. Four were finally selected for recommendation to the NDWP board as most likely to add scope to the national program and help the maximum number of low-income families.

The first group chosen was the Guyandotte Water and Sewer Development Association of Logan, W. Va. This West Virginia county had suffered decades of neglect to its water and waste disposal facilities. Its population had declined from 68,000 in 1950 to 48,000 in 1970. The prime causes were mine mechanization and the lack of adequate public services, including sanitary facilities, which were needed to attract new industries.

Project Director Roscoe Thornbury faced other problems as he organized Guyandotte for its first year as an NDWP project. Logan County is very mountainous, its many small communities isolated in numerous "hollows"—narrow valleys that often provide room for only one row of homes. These are usually placed so close together that there is no space for on-site disposal systems such as septic tanks. Most families use privies or simply pipe their wastes into nearby streams that are often used for water supplies by neighbors downstream.

The few central water systems that serve these remote communities were built about fifty years ago and now suffer from serious neglect. Testing has shown most of them contaminated, some badly. Added to the isolation of the communities and the small lot size was the fact that rock was never very far below the surface, making pipe laying very expensive.

With the help of NDWP and the Commission, Thornbury and his staff are now taking the initiative in solving their community's problems. The residents of the Big Creek area, one of the county's most deprived, have organized themselves into a utility company based on the Roanoke model and an engineering feasibility study has been completed. The engineers have recommended a combination of central and cluster water systems to serve the 250 families involved. Such systems—serving as many as ninety and as few as five families—will save the company over $100.000 in construction costs and several thousand dollars a year in operating costs.

Waste disposal will be accomplished through the use of innovative methods—small diameter plastic pipe to pump sewage under pressure from scattered locations to hook up with conventional gravity sewers in more populous areas is a possibility. If terrain problems can be overcome, all communities will be served by one treatment plant.

SOUTH CAROLINA

For its next project, NDWP chose an already thriving public health organization, Beaufort-Jasper Comprehensive Health Services, Inc. of Beaufort, S.C. In operation a little over a year when chosen by NDWP, it had already made more than 20,000 patient contacts among the low-income families of these coastal South Carolina counties.

Realizing that efforts to improve overall health conditions would only be partially effective unless sanitary facilities were also improved, Project Director Thomas Barnwell, Jr. and his staff had already initiated such programs.

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Where possible, tap-in fees were paid for families who lived along the water lines of existing systems. Help was given to families who could qualify for FmHA individual loans to install modern water systems and the group even built adequate sanitary privies for many families.

With NDWP's help, this program was expanded. Possum Hill now has water service as a result of a cooperative effort between the Beaufort-Jasper Special Water Project and an existing utility, the Beaufort Water Authority.

In addition to working with existing utilities, the Water Project is planning traditional FmHA financed systems. One, a large central well system to be built in cooperation with the small municipality of Bluffton, will serve almost five hundred families and include fire protection. A cluster system propsed for several communities in Jasper County envisions forty-seven wells to serve about 120 families. All the new companies will benefit from comprehensive training on the NDWP model and will be continuously supported in their efforts to help themselves by the Special Water Project staff.

ARKANSAS AND NEW MEXICO

As the first year of the national program neared an end, the Commission recommended the funding of the two additional NDWP model projects.

The Lee County Cooperative Clinic of Marianna, Ark., led by Project Director Olly Neal, Jr., will help organize the low-income families of Lee, Phillips and Monroe Counties. Three projects are planned for the first year. Seventy families in the St. Paul-Garret Grove area will be hooked up to the water lines of the existing Lee County Rural Water Authority.

A cluster system is proposed for the Monroe-Smale-Blackton area to serve 130 widely scattered families. A community with existing piped-in water will be the first NDWP-sponsored project to be assisted specifically in handling a sewage problem. High density low-income housing and poor soil conditions have created a condition where a virtual lake of effluent often occurs. Innovative methods will be applied to bring this problem under control.

The new project in New Mexico will be NWDP's first state-wide effort. NDWP's main partner will be the Home Education Livelihood Program (HELP), which is sponsored by the New Mexico Inter-Church Agency. With funding from OEO, HEW and the Ford Foundation, among others, HELP operates forty centers with programs in skills training, literacy, housing self-help, child development and migrant health.

Technical assistance, a cash grant and full-time staff support will be provided by the State of New Mexico Environmental Improvement Agency, which is already active in building water systems in many areas in the state. This three-sided partnership will enable NDWP to test its methodologies in a much larger arena, especially in the organization of support companies as begun in Logan County, W. Va. It is planned that 1,000 families will be organized for the first year effort.

Although NDWP is just beginning to operate on a statewide basis, close cooperation with state agencies has always been a feature of its activities. State health departments, in particular, have worked in partnership with the NDWP projects. Excellent relationships have also developed with regional and statewide planning commissions and with the offices of the governors involved. With the possibility that revenue sharing will become an increasingly important source of funding for local improvements, NDWP will be able to offer the states the benefit of its considerable experience as a basis for new programs.

It is also hoped that local municipalities will begin to play a more important role in providing needed facilities. The most logical method of extending service to many small and scattered communities is through the expansion of an existing municipal system. Lack of the necessary funding capability and legal stumbling blocks have often prevented such local action, however. Even where local authorities have been willing to extend pipe lines to unincorporated areas, they have been forced to pass the cost of new water or sewer mains along to the prospective customers, thus putting the cost of service out of their reach. More readily available construction grant funds would result in greatly increased activity in this area.

PUBLICATIONS

While the development and support of existing and new NDWP model projects was an important part of the national program, it was by no means the

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only one. Throughout the year, the Commission was active in preparing a series of publications meant to help not only the local NDWP projects, but rural residents everywhere who need assistance in solving their water-sewer problems. These include:

Guide for the Development of local Water Projects. Prepared by Conset, Inc., the NDWP consultant for program development, this guide leads local groups through the intricacies of project development with methods based on actual experience in a wide variety of situations. It is the first such work to focus on the organization of water and sewer projects in local rural areas.

Rural Water Systems Planning and Engineering Guide. Written by Commission member Jay H. Lehr and Michael D. Campbell, both of the National Water Well Association, this book includes sections on water system development, well construction, pumping and treatment facilities, cost analyses and comparisons, and well and water system maintenance. It encourages a complete evaluation of all available alternatives for both water source and distribution system in selecting a system appropriate to local conditions. This guide is designed for use by the local project staffs and their engineering consultants.

Wastewater Treatment Systems for Rural Communities. Written by Commission member Steven N. Goldstein of System Sciences, Inc., assisted by Walter J. Moberg, Jr. of Princeton University, this is a guide to the latest technology for wastewater treatment in small communities. Information on basic concepts such as soil absorption of effluents and traditional systems such as septic tanks is presented, as well as descriptions of innovative approaches such as small diameter pressure sewers and individual home aerobic treatment units. An extensive compilation of pictures and summary data sheets which describe a wide range of commercially available equipment is included. An original contribution by Prof. Alfred P. Bernhart on advanced design of soil systems for wastewater disposal is also included.

Company Training Manuals. Also prepared by Conset, Inc., these are used both to train new companies prior to beginning operations and as reference works afterwards. There are manuals on company management, administration, and facilities maintenance. Already in use in Roanoke, they will undergo further revision, based on wider project area experience, before final publication.

In addition to these practical and immediately useful publications, the Commission will from time to time, issue other reports on the implications of its policies on national programs for improving rural water-waste delivery. *Water and Wastewater Problems in Rural America,* for example, was published in March of 1973. This comprehensive report documents the existing situation in rural America, describes current programs for improvement of facilities and their limitations, and outlines some preliminary guidelines for public policy changes to better meet the demonstrated need for improved facilities.

NATIONAL INFORMATION CLEARINGHOUSE

One of the most important activities of the Commission and NDWP is their National Information Clearinghouse. It is operated by the Ground Water Council, a public education and information group dedicated to the development and preservation of the nation's ground water resources. Durward Humes, Executive Secretary of the Council, is a member of the Commission. Pat Cannon serves as Public Information Director.

The Clearinghouse publishes *Rural Water News,* a newsletter distributed on a regular basis to more than 10,000 individuals connected with rural affairs on both the local and national levels, including members of Congress and the Executive Branch. In addition to telling the Commission and NDWP story, it features articles of a more general nature which relate to rural water supply and waste disposal.

The Clearinghouse also issues press releases to the national media; distributes Commission publications; writes stories on particular aspects of the program for use by individual publications or special interest groups, such as farm editors; makes personal appearances to a wide variety of groups, both local and national; assists the local project directors in their information efforts; and keeps everyone connected with the project up-to-date on legislative and administrative matters that might affect rural sanitation.

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The large volume of inquiries generated from such a program—more than 3,000 in less than a year—are answered in a variety of ways. The main vehicle is the *Rural Water Information Kit*, which contains a wide variety of material explaining every aspect of NDWP and Commission methodologies and practices. More specific inquiries and requests for assistance receive individual replies. Technical matters are referred to Commission members and staff competent in the particular field. Many inquirers are referred to the government agency that can provide immediate help and others receive help in the form of specific Commission publications. The overall goal of the Clearinghouse is to make itself the recognized national source of information regarding rural water and waste disposal problems.

POLICY STATEMENT CONFERENCE OF STATE SANITARY ENGINEERS ON FEDERAL LEGISLATION REGARDING DRINKING WATER SUPPLIES

The membership of the Conference of State Sanitary Engineers has for over fifty years and still continues to be deeply involved in assuring the safety of the drinking water provided all Americans. Their responsibility is based on State laws and regulations with supervisory control carried out through State and local water supply surveillance programs.

The Federal Government currently has authority to evaluate water supplies used as sources of water by public carriers traveling in interstate commerce. This was exercised for many years by the Public Health Service, but under Federal reorganization, is now under the United States Environmental Protection Agency. Supporting services by these agencies include minimal technical guidance, training and research.

The problem of drinking water was of major environmental concern in the first three decades of this century. However, growing concern with water pollution, air pollution and other environmental problems has more recently caused serious neglect of water supply programs in comparison to the resources allocated to the newer programs.

A priority effort is now needed and the Conference of State Sanitary Engineers strongly supports an augmented national water supply program, primarily state-based, with strengthened State and local regulatory programs and a Federal role in drinking water standards, research, training, technical assistance and financial aid on the above as well as State program costs.

A national program is needed, not merely another new Federal program. Regulation of the traditional community water supplies should be a shared Federal-State program. Smi-public and individual home drinking water supplies would be a State program shared with local health agencies where available.

National drinking water standards for community water supplies should be promulgated by the Federal government with the advice of a qualified advisory council representing regulatory agencies, academia, consumers and utilities. Standards should address themselves to chemical, biological and physical water quality, monitoring and surveillance programs to be implemented by the States. There is no evidence to indicate the need for design requirements to be a part of Federal standards.

Enforcement must be State based except for emergencies that would transcend State capabilities. Unnecessary Federal duplication that exists in the provisions of proposed laws must be expressly avoided.

State program grants in adequate amounts are essential to a national water supply program or such program is doomed for failure. It must be recognized that an adequate national water supply program requires substantial commitment of Federal financial resources if it has any chance of success.

The Conference cautions on the compulsory provisions of public notification as contained in proposed legislation and urges the provision of options to enable judgments to be made on the public health need of such notification.

Finally, the success of a national water program is no stronger than its weakest link, so attention must be directed to ample provisions and funding for research; training of operating, teaching and regulatory personnel; Federal State and local staffing; and demonstration of new methodology.

I am pleased to present to you a resolution passed unanimously at the 1970 annual meeting of the Universities Council on Water Resources held at the Virginia Polytechnic Institute, Blacksburg, Va., in my capacity as chairman of the councils committee on water quality. This resolution was reaffirmed at the Councils 1971 Annual meeting at Oregon State University, Corvallis, Oregon.

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This conference is one of a series of meetings that have been held annually since 1965.

The Universities Council on Water Resources is an organization of universities that are active in both graduate education and research in water resources. The aim of the council is to encourage education and research in these areas and to provide a clearinghouse for information as well as a forum for discussion of questions of mutual interest.

The present membership of the Universities Council on Water Resources stands at 67 and each of tthe member universities is represented at council meetings by officially appointed delegates or their alternates.

Membership is open to U.S. universities only but a number of foreign universities have become affiliated with the organization. A list of the member universities is attached as appendix A to the resolution and you will note that this list represents a very large group of major universities in the United States. The resolution which they passed is a resolution on national policy concerning safety of public water supplies.

RESOLUTION PASSED AT THE 1970 ANNUAL MEETING, UNIVERSITIES COUNCIL ON WATER RESOURCES, BLACKSBURG, VA., JULY 29, 1970

RESOLUTION ON NATIONAL POLICY CONCERNING SAFETY OF PUBLIC WATER SUPPLIES

WHEREAS wastes discharged to many of the Nation's water supply sources include a large and changing variety of refractory chemicals of real or potential significance to the public health; and

WHEREAS present water treatment technology as generally applies does not effectively remove these substances; and

WHEREAS the recent grave national crisis with respect to mercury, pesticides, and other materials shows clearly that classical epidemiological techniques do not signal the presence of many toxic contaminants of public health significance including subclinical or chronic effects on human health; and

WHEREAS present drinking water standards and monitoring practices are not adequate to disclose many such materials; and

WHEREAS a recent national survey of public water supplies by the Public Health Service disclosed many instances in which such supplies failed to conform to one or more of the present drinking water standards; and

WHEREAS federal responsibility for the safety of water supplies used in interstate commerce is lodged in the Bureau of Water Hygiene of the Public Health Service and such program has never been provided with an adequate legislative base nor administrative and budgetary support to carry out its responsibilities; and

WHEREAS this program is scheduled for transfer to the proposed new Environmental Protection Agency;

NOW, THEREFORE, BE IT RESOLVED that federal responsibility for the provision of safe community water systems be recognized through new legislation applicable to all public water supplies, which would establish and maintain applicable national chemical, biological, and physical drinking water standards, strengthen and encourage state and local programs, provide for adequate monitoring and supervision, and substantially increase appropriations for these purposes together with a vigorous research program to establish the safety of water supplies under varying conditions of raw water quality and water treatment technology; and that steps be taken to assure that the public water supply program be given administrative status in the Environmental Protection Agency commensurate with its importance to the public health.

APPENDIX A

UNIVERSITIES COUNCIL ON WATER RESOURCES, MEMBERS, JULY 1970

Alabama, Auburn University, University of Alabama.
Alaska, University of Alaska.
Arizona, University of Arizona.

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California, California Institute of Technology, Stanford University University of California, Berkeley, University of California, Davis, University of California, Los Angeles, University of California, Riverside, University of Southern California.
Colorado, Colorado State University, University of Colorado.
Connecticut, University of Connecticut.
Florida, University of Florida.
Georgia, Georgia Institute of Technology.
Hawaii, University of Hawaii.
Idaho, University of Idaho.
Illinois, University of Chicago, University of Illinois, Southern Illinois University.
Indiana, Indiana University, Purdue University.
Iowa, Iowa State University, University of Iowa.
Kansas, University of Kansas.
Kentucky, University of Kentucky.
Louisiana, Louisiana Polytechnic Institute.
Maine, University of Maine.
Maryland, The Johns Hopkins University.
Massachusetts, Massachusetts Institute of Technology, University of Massachusetts.
Michigan, Michigan State University, University of Michigan.
Minnesota, University of Minnesota.
Mississippi, Mississippi State University.
Missouri, University of Missouri.
Montana, Montana State University.
Nebraska, The University of Nebraska.
Nevada, University of Nevada, Reno.
New Hampshire, University of New Hampshire.
New Jersey, Princeton University, Rutgers—The State University.
New Mexico, New Mexico Institute of Mining and Technology, New Mexico State University, University of New Mexico.
New York, Cornell University, State University College of Forestry at Syracuse, State University of New York at Binghamton, The City College of the City University of New York.
North Carolina, University of North Carolina.
Ohio, Ohio State University.
Oklahoma, University of Oklahoma.
Oregon, Oregon State University.
Pennsylvania, Pennsylvania State University, Drexell Institute of Technology.
South Carolina, Clemson University.
Tennessee, The University of Tennessee.
Texas, Texas A&M University, Texas Technology University, The University of Texas at Austin.
Utah, Utah State University.
Virginia, Virginia Polytechnic Institute.
Washington, University of Washington, Washington State University.
Wisconsin, University of Wisconsin.
Wyoming, University of Wyoming.

AFFILIATES

Australia, University of New South Wales.
Canada, University of Alberta, University of Saskatchewan.
Israel, Technion, Israel Institute of Technology.
Thailand, Asian Institute of Technology.
The Netherlands, International Course in Hydraulic Engineering.

STATEMENT OF WESLEY E. GILBERTSON, IMMEDIATE PAST-PRESIDENT, AMERICAN ACADEMY OF ENVIRONMENTAL ENGINEERS

The American Academy of Environmental Engineers appreciates the opportunity to testify on proposed Federal Drinking Water Legislation now being considered by your Committee. The Academy is composed of over 1100 of the most

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qualified environmental engineers in the Nation. Our members, certified as Diplomates, administer a large proportion of America's environmental programs, and design and operate a substantial number of our key sanitary facilities, including those in the field of drinking water supply. I am the Immediate Past-Chairman of the Academy, and I am Deputy Secretary for Environmental Protection and Regulation, Pennsylvania Department of Environmental Resources. In 1971–72 I was Chairman of the Conference of State Sanitary Engineers.

The Academy favors enactment of Federal Drinking Water Legislation of the general type before your Committee, but we believe that there has been far too much legislative highlighting of Federal regulatory powers and procedural matters, and far too little emphasis on essential technical research, development and manpower elements. We urge your Committee to rectify, in this legislation, the misplaced emphasis embodied in recently enacted Federal environmental statutes. We recommend, also, that the Congress do what it can to give top priority in the Federal program to the essential Federal role in research, development and manpower activities, through which sound solutions to water supply problems will be derived. Unfortunately, these vital elements have been downgraded and under-emphasized in recent years. We believe that protection of the public health and consumer interests will thus be best served.

In order to illustrate to your Committee the avoidable defects which have been creeping into Federal legislation, I will briefly identify some items which are being widely discussed.

Legislatively mandated deadlines enacted in the absence of foreseeable technical solutions to problems and without indication of costs or where funds will come from. (This is not to say that we shouldn't have targets and goals.)

Legislatively mandated technical criteria and standards which should be subject to revision with advent of new knowledge. (Such technical requirements should be adopted by the rule-setting method.)

Legislated procedural requirements which are excessive, do not contribute to problem-solving, but consume enormous amounts of precious staff time. This adversely affects State and local governmental programs particularly, but also industry and Federal agencies.

Legislated requirements for reporting to the Federal Government—often amplified through regulations promulgated by the Administrative Agency—which do not contribute to real knowledge, generally are duplicative of data already available, and often are far beyond what can be used effectively. Again, the wasteful diversion of staff resources for preparation of these reports slows down real progress.

Federal pre-emptive requirements which stipulate State program formats in great detail and are of doubtful significance, but which mandate Federal "take-over" if not strictly adhered to. Among many State Legislatures and Executive Offices the "threat" of Federal take-over is no longer an effective club. To some it might even be considered an opportunity—considering mounting costs and what some believe (rightly or wrongly) to be unreasonable and unrealistic Federal requirements.

We believe that good Federal legislation on Drinking Water can strike a better balance between the respective intergovernmental levels than recent Acts in other environmental fields. In order to achieve Federal-State partnership, or the "new Federalism", we need to better define the respective roles. The most important Federal role in the drinking water field is to provide the technical basis for upgrading the quality of water supply operations, where needed, and supply desirable uniformity of quality standards. There is no crisis in the drinking water field—though there are localized serious problems. As for regulatory authority, the States generally have good basic powers, which are currently being used to the extent of available resources.

In the pollution control area, it has been argued that Federal powers must sometimes be exercised to prevent "pollution havens" and ensuing economic advantages, and to correct pollution from one State from damaging another. These points are absent with respect to water supply. The Constitutional basis for Federal Drinking Water Legislation would appear to lie in the theory of preventing the interstate spread of disease (Commerce clause) and "providing for the general welfare."

Turning to the technical problems in the field of drinking water supply, for

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quick reference let me list a few problems needing research, from reports of recognized expert groups:

From Publication A:

The Behavior and Persistence of Enteric Viruses in Sewage-Polluted Water.
Adsorption, Desorption, and Ion-Exchange (of Chemicals) in Ground Water Flow.
The Effect Upon the Domestic Consumer of Trace Chemical Elements and Compounds in Water Supplies.
Characterization of Tastes and Odors in Public Water Supplies.
Decontamination Efficiency of Water Treatment Plants for Various Radioisotopes.
Effects of Controlled Recreation on Terminal (Water Supply) Reservoirs.

From Publication B:

Viruses pass through sewage treatment plants, persist in contaminted waters, and may penetrate the water treatment plant. The development of an effective method of culturing the virus of infectious hepatitis represents the single most important task for research on water-borne viruses.
Referring to synthetic chemicals—we do not know how to remove them from water. Most important, we do not know the long-range effects of these synthetics on man.
We need to know much more of the effects of mineral salts, organic compounds, domestic and industrial waste components, as well as the etiological agents of infectious disease; and we need to know the effects of deficient trace elements, molybdenum, selenium, vanadium, nickel, zinc, and copper.

From Publication C:

Viruses, such as those of hepatitis, remain a problem.
Substantial contamination of ground water with nitrates from fertilizer may cause death of infants.

From Publication D:

Many water supplies do not meet the PHS Standards, but it is not certain that the Standards are meaningful.

From Publication E:

Long-range planning for water supply and waste disposal facilities should be closely integrated with other aspects of land-use planning and with larger metropolitan or regional plans.
Greater attention (should) be given to health aspects of the drinking water supply through initiation of a comprehensive national program which would provide for development and application of improved methods of protection against disease-producing organisms and chemicals.

Though the foregoing highlighted excerpts of research and development needs which have been urged by nationally known experts for Federal action may sound like "hot" reports prepared in 1972 or 1973, they aren't. A review of the following shows that they are long-standing needs—dating back to at least 1961.

Publication A—"100 Problems in Environmental Health"

Prepared by a group of engineers and scientists under a PHS Grant in 1961.

Publication B—"Environmental Health Problems"

Report of the Gross Committee to the Surgeon General in 1961.

Publication C—"Restoring the Quality of our Environment"

Report of Environmental Pollution Panel, President's Science Advisory Committee, 1965.

Publication D—"Strategy for a Livable Environment."

Report by the Linton Committee to the Secretary of HEW—1967.

Publication E—"Changing Environmental Hazards."

Report of Task Force on Environmental Health, American Public Health Association—1967.

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My point is simply this: If the Federal program does not set up its priorities and direct its resources to researching and resolving these problems, we will probably have another report in 1974 or 1975 repeating the same recommendations. These scientific efforts would be non-duplicating, problem-solving activities. The problems cited can't be resolved by Federal directives, enforcement orders or court suits.

Establishment of a national program of research and development on water supply, using manpower resources of real professional stature should be the Number One goal of Federal legislation. The program should utilize, not only Federal, but all sources of research and development capability.

The principal inspection and enforcement powers should remain in the States and program grants should be provided to strengthen these efforts. In order to accelerate the national program of water supply inspection, testing, and enforcement, it will be necessary to provide program grants to the State agencies. One important reason for this is that State environmental program emphasis has been shifted away from water supply to pollution control by public pressure over the past decade and by the need to provide State matching grants for air and water pollution control activities.

We are aware that a recommendation has been made to finance the program through a system of charges to the local public water supply agencies and privately-owned public water supply companies. This does not appear to be a realistic approach. If the broad public interest requires more comprehensive surveillance of public water supplies, the Federal and State Governments should fund the program. Undoubtedly there would be great difficulty in obtaining State legislative approval of a levy against local agencies because of their opposition.

The American Academy of Environmental Engineers appreciates the opportunity of commenting on the national water supply issue. We will be pleased to answer questions or provide further information.

Mr. BROWNLEE. Our final witness today, and let me welcome her on behalf of both Senator Hart and the committee is Ruth C. Clusen, who is the National Environmental Quality chairman of the League of Women Voters of the United States.

Might I add that the league has recently published two documents and they are attached to your statement.

STATEMENT OF RUTH C. CLUSEN, LEAGUE OF WOMEN VOTERS OF THE UNITED STATES, CHAIRMAN, ENVIRONMENTAL QUALITY

Ms. CLUSEN. I want to file my statement with the two publications attached.

I am pleased that we have been able to produce these publications in the last month, dealing with the subject which we are really talking about today, because we do hope they will inspire some public attention to this too-long neglected problem.

You will note one of them is a study of the problems of adequate standards for drinking water and the other is a guide for community groups on what you can do about it. We hope they will receive some attention and generate some interest on behalf of your legislation as well.

The league has looked at the three major pieces of legislation which deal with drinking water standards, and we certainly find that S. 433 is by far the strongest and the best of the measures which are now before the Congress. We certainly want to congratulate the committee for the consideration that is given to this bill and to express the hope that not only will the bill make some real prog-

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ress in this session, but perhaps it will even be improved in a couple of places.

I know that you have heard a great deal about a good many of the subjects on which we had planned to comment, so I think I am going to limit my oral statement to some of the things which it seems to me have not been sufficiently emphasized, at least during this afternoon's session.

For example, we like your use and the definition of the public water system as one which serves at least 10 premises or 40 persons, or any other system subject to the determination of the administrator.

What we like about it is its flexibility, which would permit coverage of smaller systems which are often the ones most in need of assistance.

It does seem to us that this is a case in which we must not play the numbers game, and that there is no particular magic in saying that if it serves fewer than 10 premises or 40 persons, then it is either all right not to regulate the quality, or that there is no problem.

So we are glad that this flexibility is in it, and certainly hope it will be retained. I know that there has been discussion, in some quarters, about the difficulty of implementing this kind of legislation. We think the drinking water bill would be easier to implement than the water and air quality legislation, because there is some basis already in the Federal drinking water standards, and a procedure for revising them; and in addition to this, every State has some procedures for testing, and hopefully some control.

So there is a basis on which to begin. We think the provision in section 4A which states that regulations issued by the administrator should take effect "as soon as practicable" should be worded more precisely to insure that the implementation of standards takes place as rapidly as possible.

Then I would like to make some comments on the regulation of bottled drinking water, because we think that it is a particularly good thing to include this kind of provision.

We believe that perhaps the regulation of bottled drinking water should remain with the FDA, since it is a product and not one which the EPA is accustomed to dealing with. However we would have no real objection to its being transferred to EPA. We agree that the standards for this water should be promulgated without delay and should be at least as stringent as the Federal drinking standard.

We also believe that labels on bottled water should state that the drinking water standards have been met, and we know that this does not appear in any of the three legislative proposals at which we have looked.

With regard to the Federal Government's role in enforcement, which is coming in for much discussion this afternoon also: On the basis of our past experience with air and water quality standards, where we found that standards are meaningful only when they are accompanied by adequate enforcement tools, we believe there is a role for the Federal Government here.

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We think the primary role should rest with State and local agencies, but that the Federal Government, EPA, should have sufficient authority to enforce the Federal standards when State and local agencies fail to act, particularly in the case of imminent hazard.

We think that State and local authorities should also have the power to set stricter standards if they so desire.

As to the question of surveillance, we agree with S. 433 that they should be required to submit to EPA an annual plan for this kind of surveillance.

With respect to regulations, budgets, personnel, and certification programs, they should be included in the plan. We also think the EPA administrator should have the authority to make a complete audit, as is indicated in S. 433. He should also make spot checks to determine whether surveillance is adequate and whether the goals are being met.

We think that State plans should also provide for the implementation of a standard violation notification procedure, as is provided in the two bills before the Senate. We, however, support a mandatory requirement that the owner of a water supply system which fails to meet the Federal standards must notify the consumer, the State, and the EPA of the violation. We agree that if the violator fails to meet this requirement, he should be subject to penalty.

One of the matters which has not come in for much discussion this afternoon, although it may have previously, is the role of the public, and I would like to make a couple of comments about this, because this is possibly the role to which the league is most closely attuned.

We think that the public should have the most to say, after all, about the quality of drinking water. The public therefore should have information and have the opportunity to make sure that Federal standards are applied and enforced. Therefore we suggest that public disclosures of water quality should come long before a violation occurs.

In fact, we suggest that, at least on a monthly basis, through the appropriate media, the public should have a means of knowing the constituents for which standards have been set. This information should be presented in such a way as to help the public to see whether or not the standards are being met.

I know that this might well be considered a hardship on the part of some of the utilities and the companies which would have to do this. But we know that they must have this kind of record and keep those records all the time. We think public interest and public support for the kind of money and the standards which are necessary would be improved if we were to begin on the same basis, as has happened particularly with air quality standards, of reporting to the public on what is the level of quality so to speak, at any given time.

Of course, we think the law should provide for public participation from the earliest stages of the program, from regulation formulation through planning and reviewing, and in every stage of the game.

Of course, we support the proposal for citizens' suits. I am not unaware that this is not looked upon favorably in all quarters or that there was some comment about this this afternoon.

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We think that just as in the Clean Air Act, citizens should have the right to commence a civil action against any agency or person which violates the act and against the administrator if he fails to perform. Indeed we think this should extend not only to his performing the legal obligations specifically stated in the act, but also to his failure to fulfill the intent of the act.

Just one or two brief comments on the question of financial assistance, which I know is also at the heart of much of the debate on this bill. We know that water supply systems have been self-supporting, and we agree there is no particular reason to change this except for special situations in poverty areas. But we do believe that there is a role for Federal financial assistance in other aspects of drinking water quality.

First, of course, is the need to provide for qualified personnel and to provide Federal funds to train technical and supervisory personnel, and I sense no quarrel on that from most of the people who have been at this hearing.

Second, we recognize the need for more Federal funds for research and development to solve some of the problems of contaminants which seem to proliferate faster than they can be solved. We would also like to see Federal funds used for research and development in reclamation, recycling, and reuse of waste water.

There is no particular reference to this in any of the three pieces of legislation.

Third, we support provisions in the bill for grants to States to strengthen water system supervision programs subject to approval of State plans.

We know that States lack the money, the authority and the trained personnel to carry out the water supply responsibilities. Since we believe that they should have this kind of authority, we think that they should also have some financial aid to encourage the enforcement of the Federal standards more effectively.

Finally, we support grants for study and demonstration projects to assist in the development of new techniques, methods, or approaches for providing safe water or for determining the implications of waste water reuse.

In conclusion, I would point out that we also make reference to the protection of ground water sources, the question with which the previous panel just dealt. We, too, wonder whether the Federal Water Pollution Control Act Amendments of 1972 really do very much to prevent underground water sources from becoming a source of polluted drinking water.

We are pleased to see that the present bill recognizes the need to protect underground waters in that it authorizes EPA to conduct a survey of the adequacy and quality of ground water supplies.

We appreciate the work of this committee and the opportunity to appear before you today and to insert in the record not only our statement, but our publications. We hope that this is indeed the year when something will happen and that this is an idea whose time has come.

Thank you.

Senator HART. Thank you, very much. I have just a couple of questions, but let me make a comment on the record.

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It does not surprise me a bit that the League of Women Voters comes to the Senate and testifies as you have in support of the effort to improve the quality of our water.

If my life depended on it, I could not state the name of the special select committee that I have in mind, but in the late 1950's or early 1960's, under the chairmanship of Senator Kerr of Oklahoma, a select committee was established by the Senate, and it was my good fortune to be on it, and as I recall we were charged with attempting to identify the water needs of the Nation by 1980, I think it was.

In any event, that committee held hearings at 19 locations across this country, and the only voice that was heard at each one of those 19 hearings was the voice of the League of Women Voters. It was the league in South Dakota—I remember that—and we had a hearing in Detroit. At each point, the League of Women Voters testified, and that was at a time when the awareness level across this country with respect to water, except in the traditionally arid States, was zero.

So, now that the level of concern has risen, it would be amazing the League were not here.

Ms. CLUSEN. Thank you, Senator. We appreciate that. I remember that time well, and we are still doing it nearly 20 years later.

Senator HART. The publications you mentioned are good.

Why do you feel that the FDA, as you mention in your statement, should continue to regulate the bottled water? I have a tentative feeling that it would be preferable that one agency regulate all the drinking water, whether it is tap or bottled.

Ms. CLUSEN. We do not feel strongly about this, but there are two ingredients, I think, that were part of our rationale in deciding to say this, and one of them is that where is absolutely no point in giving the Environmental Protection Agency anything else to do unless we give them enough money to provide the staff and the research they need.

We know that the amount of money which they have for the whole drinking water standards, and water supply operation at EPA is limited.

As you look at the proposals in the legislation for additional funding, there can be little doubt that it will be difficult for them to do everything they are supposed to do. If this matter of bottled drinking water is to be turned over to EPA also, I think there must be a fiscal note attached to this which will permit them to do the kind of investigation they need.

I think maybe the other ingredient was our feeling that because there is a manufacturing process involved, and because it is a different thing than dealing with pollution and EPA is primarily a pollution agency, that perhaps there was some merit to retaining it in the Food and Drug Administration, but this is not a matter which we would quarrel about.

Senator HART. As you mentioned earlier today, we heard concern voiced that disclosure of violation of standards would unduly alarm a community. I take it you simply find yourself in disagreement with that.

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Ms. CLUSEN. Yes. I suppose it is the nature of my organization, but I also believe that there is more public fear generated from ignorance than from understanding. I don't think that knowing the quality of air pollution and the ingredients which make it up, or knowing the level of pollution in any stream has given rise to any more fear, panic and rumor than guessing does. If the public were to become accustomed to the idea that there are drinking water standards, that there is a safe level of contamination, so to speak, and an unsafe level, and learn to watch this, they would not be nearly as panic-stricken as they are by the kind of scare stories which occasionally leak out about illness and indeed even death from contaminated water supplies.

Senator HART. In the bill, S. 433, we try to do so. We try to respond to this up to a point. We require disclosure of the violation, but to avoid unreasonable alarm, we require, also, the simultaneous publication of the extent of the danger, and of the actions which would be required to give protection. I am citing from the record on page 21.

Ms. CLUSEN. I guess——

Senator HART. That is section 8.

Ms. CLUSEN. Yes.

Senator HART. On page 21, lines 6 or 7. It will be required to so notify its customers of any violation in transmitting the water bill, or through other appropriate means, of the nature and extent and possible health effects of such violation and remedial measures that will be required to correct the problem.

It seems to me that that does as well as one can balance it, and I agree with you completely that unless a community is alerted, even though it will be alarming, the likelihood of corrective action is that much less.

Ms. CLUSEN. The other way of looking at it, I guess, would be that perhaps the public would be less fearful of this when it does happen if they become accustomed to the fact of routine disclosures. But this goes a long way toward doing what we want to do. It is a necessary part of the bill, and we are delighted to see it.

Senator HART. Mr. Brownlee?

Mr. BROWNLEE. Thank you, Mr. Chairman.

You mentioned in your statement that the protection of ground water was very important to the League, and that the Federal Water Pollution Control Act amendments that were passed last year provide questionable protection with respect to the control of ground water contamination. Is it your position that an investigation of ground water pollution in rural areas is sufficient at this time, or should we expand the survey to examine the adequacy of State regulation in waste-well injections as well?

Ms. CLUSEN. I think there is no question but what we would be glad to see it include more than rural areas, if it were possible to do this. The entire handling of ground water sources in Federal legislation up to this point has been very hesitant, to say the least. Indeed I was present to testify the afternoon that quite a debate raged over the definition of ground water sources, and I think that it is very good to include it in this legislation in this way. If you can go into it beyond the rural drinking water supplies, that would be fine.

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I think the reason we didn't say anything about that was the practicality. This may be as much as can be accomplished in this piece of legislation.

Mr. BROWNLEE. Thank you very much.

Thank you, Mr. Chairman.

Senator HART. Again, I thank you.

Ms. CLUSEN. Thank you, Senator.

[The statement follows:]

STATEMENT OF THE LEAGUE OF WOMEN VOTERS OF THE UNITED STATES

Members of the League of Women Voters of the United States, along with most Americans, expect tap water anywhere in this country to be safe and palatable. Because we have been studying water quality for years, we know that the facts do not corroborate these expectations. We know that water supplies can become polluted in many ways; that quality standards differ throughout the country; and that citizens, for the most part, simply do not know whether or not their drinking water meets any standards.

FEDERAL DRINKING WATER STANDARDS

The League welcomes legislation introduced in the Senate requiring public water systems to meet the federal drinking water standards now applicable only to drinking water used on interstate carriers. We note that S. 433 defines the term "public water system" as one which serves at least 10 premises or 40 persons or any other system subject to the determination of the Administrator of the Environmental Protection Agency. We agree with this flexible definition because smaller systems, according to the Community Water Supply Study, are often the ones most in need of assistance. While we realize that it may be administratively difficult for the federal government to check up on these smaller systems, we feel that the Environmental Protection Agency should be allowed to enforce federal standards for smaller systems if the Administrator determines that they present a hazard to public health. Moreover, as a minimum, it should be the stated policy of Congress that federal standards must be met by *all* water supply systems including community systems (serving fewer than 10 premises or 40 persons), semi-public systems (serving the traveling public), individual systems, and federal facilities. Federal primary drinking water standards should apply to contaminant levels, as well as to treatment, operation, maintenance, surveillance, construction and site selection requirements.

Implementing this new legislation should be much easier than implementing the water and air quality legislation for several reasons. We already have federal drinking water standards, as well as a procedure for revising them periodically. In addition, every state has some procedure for testing and presumably exerting control over contamination of potable water supplies. We feel, therefore, that the period between the promulgation of federal primary and secondary standards and the time they take effect need not be unduly long. Section 4(a) states that regulations issued by the Administrator shall take effect "as soon as is practicable." We feel that this provision should be worded more precisely to ensure that the implementation of standards take place as rapidly as possible.

REGULATION OF BOTTLED DRINKING WATER

We believe that the regulation of bottled drinking water should remain with the Food and Drug Administration. However, we agree that standards for bottled drinking water, including water sold within state boundaries, should be promulgated without delay and should be at least as stringent as the federal drinking water standards. We also believe that labels on bottled water should state that federal drinking water standards have been met.

THE FEDERAL ROLE IN ENFORCEMENT

The basic question addressed in S.433 is the relative enforcement role of state and local authorities vis-a-vis that of the federal government. Our past

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experience with air and water quality standards has been that standards are meaningful only when they are accompanied by adequate enforcement tools. In the case of drinking water, we see a role for the federal government that is parallel to that worked out in air and water pollution legislation.

The primary role in enforcing drinking water standards for all public water supply systems should rest with state and local agencies, but the Environmental Protection Agency should have sufficient authority to enforce compliance with the federal standards when state and local agencies fail to act, particularly in the case of imminent hazard. State and local authorities should, however, have the power to set stricter standards if they so desire.

In order to determine hether federal standards are actually being implemented, states should be required to submit to EPA an annual plan for state surveillance of local systems with respect to their regulations, budgets, personnel, testing and certification programs, as well as long-range plans. The EPA Administrator should have the authority to make a complete audit of state water supply systems, to make spot checks, and to enforce federal standards directly if local and state governments fail to do so.

State plans should also provide for the implementation of a standards violation notification procedure. We support a mandatory requirement that the owner of a water supply system which fails to meet the federal standards must notify the consumer, the state, and the EPA of the violation. If the violator fails to meet this requirement, he should be subject to civil and criminal penalties.

THE ROLE OF THE PUBLIC

We feel that provisions for routine public disclosure of the quality of the drinking water and for public participation in formulating and enforcing regulations are essential. Because the public has the most at stake in the quality of its drinking water, it should have the information and the opportunity to make sure that the federal standards are applied and enforced. We believe that public disclosure of water quality should come long before violations of federal drinking water standards and should be made on at least a monthly basis through the appropriate media. This disclosure should list all constituents for which primary health standards and secondary esthetic standards have been determined and should be made in such a way as to enable the reader to see immediately whether the standards are being exceeded for any constituent. We do not regard such a requirement as a hardship for the purveyor since his records must show this information at all times regardless of whether or not they are published for the benefit of the public. Nor do we agree with the sentiment often expressed that the public doesn't care and wouldn't read the information. We know that many people do care and would read these data. Also we are certain that when money must be raised for improvement of water systems, an informed constituency will prove to be extremely effective in helping to raise it.

The law should provide for public participation from the earliest stage of program and regulation formulation to participation in planning and reviewing state enforcement of federal standards. As in the Federal Water Pollution Control Act Amendments of 1972, the Administrator of EPA should be required to publish guidelines in the Federal Register for public notification of hearings and public meetings, for public access to information and documents, and when public hearings should be required. The Administrator should be required to appoint to the National Drinking Water Advisory Council five public members with no direct profit-making interest in the production and distribution of safe drinking water. The Administrator should also be required to take the Council's views into consideration before promulgating federal drinking water standards.

Furthermore, as in the Clean Air Act, citizens should have the right to commence civil action against any person or government agency in violation of the provisions of the Safe Drinking Water Act and against the EPA Administrator when he fails to perform the legal obligations specifically stated in the act or when he fails to fulfill the intent of the act.

FEDERAL FINANCIAL ASSISTANCE

Traditionally water supply systems have been self-supporting, with respect to both capital expenditures and operating expenses. We know of no reason to

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change that situation at present except for special situations in poverty areas where programs have been administered under the Office of Economic Opportunity, the Farmers Home Administration, and possibly other federal agencies, to provide assistance in establishing community water supply systems. We do recognize, however, the very important role which federal financial assistance can and should play in other fields.

First, the League of Women Voters has long recognized the need to have water supply systems, as well as sewage treatment systems, operated by qualified personnel. We, therefore, support the section in the bill which provides for federal funds to train technical and supervisory personnel for the operation and maintenance of water supply systems. Here too, it is probably the smaller systems which are most in need of such assistance.

Second, we recognize the need for more federal funds for research and development to solve problems associated with the removal of contaminants in water—problems which seem to proliferate almost faster than they can be solved as pollution of both surface and underground raw water sources increases. We would also like to see federal funds used for more research and development on reclamation, recycling and reuse of waste waters to make them suitable as raw water sources.

Third, we support provisions in the bill for grants to states to strengthen public water system supervision programs subject to approval of state plans. Because states often lack the money, authority, and trained personnel to carry out their water supply responsibilities, we believe that such financial aid will encourage states to enforce federal drinking water standards more effectively.

Finally, we support grants for special study and demonstration projects to assist in development of new techniques, methods, or approaches for providing safe water or for determining the health implications of waste water reuse.

PROTECTION OF GROUNDWATER SOURCES

We question whether the Federal Water Pollution Control Act Amendments of 1972 provide adequately for the prevention of pollution of underground water sources used for drinking water. We are pleased to see that the present bill recognizes the need to protect underground waters by authorizing TPA to conduct a survey of the adequacy of rural drinking water supplies, including an investigation into the actual extent of groundwater pollution.

The League of Women Voters of The United States commends this Subcommittee for its diligent work to provide safe drinking water for all citizens of this country. We will continue to support your efforts and will work for enactment of legislation to meet this goal.

THE WATER YOU DRINK—HOW SAFE IS IT?

Safe drinking water for every person in the United States... That doesn't sound like an unreasonable goal in the 1970s.

It's not unreasonable and it's not unreachable—but we have a way to go. It's something of a national disgrace to have to record that we are still experiencing outbreaks of water-borne disease and that many people still dip their drinking water from open streams or lakes—at great health risk and at great effort.

Exaggeration? Scare tactics? Here are some hard facts from the U.S. Environmental Protection Agency (EPA).

In March 1973, two severe community problems traceable to unsafe drinkwater occurred in Florida. In one, 97 cases of typhoid were reported in a migrant labor camp 25 miles south of Miami. The other was the discovery of high bacterial counts in Miami Beach drinking water, with the warning to drink only boiled water.

From 1961 to 1970 there were 128 known outbreaks of disease or poisoning traceable to drinking water. Twenty people died and an estimated 46,374 became ill. It is safe to assume that many additional cases were not even reported.

A 1969 U.S. Public Health Service (USPHS) study disclosed that over half (56 %) of 969 public waterworks surveyed had physical deficiencies; over half (51%) failed to disinfect their water; one-sixth (16%) exceeded one or more mandatory limits in federal drinking water standards.

The same study revealed that most deficiencies were found in smaller waterworks, which often lack staff, equipment, and funds to improve their

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operations. Of the 40,000 waterworks in the nation, 1,300 large systems serve 106 million people while the rest supply only 54 million people. This leaves 50 million people dependent on individual home supplies.

An estimated 20 million Americans have inadequate plumbing facilities.

None of these reports sums up the hard-to-calculate costs of impaired health, lost days of work, and reduced standard of living traceable to substandard water supply.

Health-conscious as Americans are, we have been surprisingly slow to insist that this gap in our public health protection be closed. The spotlight has been focused on treating the wastewater we discard, but we have neglected the other side of the coin—upgrading the quality of the water we drink. Though the first step—protecting the raw water source—is now getting national attention, much more needs to be done. The water every person in the U.S. drinks should be free of any disease-causing substances and it should taste and look pleasing. It must be delivered to our taps in as pure a condition as it leaves the treatment plant or well.

As our population multiplies, requiring ever more clean water, and as new pollutants appear, we will have to run harder, just to stand still. Rather than allow a health crisis to develop, communities need to improve existing drinking water systems now, as well as plan for future ones.

WHAT IS SAFE DRINKING WATER?

Safe water *should* not contain any harmful bacteria and viruses or contain more than specified amounts of a long list of chemicals known to be toxic.

A safe water supply system *should* achieve certain minimum standards of facility design, operation, and surveillance.

The EPA drinking water standards

The USPHS issued the first federal drinking water standards (DWS) in 1914, revised from time to time. When EPA was established in 1970, it took over the responsibility for upgrading the standards.

Legally only drinking water used on interstate carriers (ships, trains, buses, airplanes) is required to meet federal bacteriological standards and receive federal certification. Today 700-odd systems that supply water for such use must pass periodic federal inspections in order to be certified. For the other 40,000-odd systems in the country and for federal facilities not affecting interstate carrier no federal certification is required.

New legislation has been proposed: to make the federal DWS mandatory for all public water systems, to establish effective enforcement arrangements among federal, state and local authorities, and to provide for greater public notification about drinking water quality.

Meanwhile, as of 1971, 14 states have adopted the federal DWS as their own. One state has adopted stricter standards, 7 states have adopted the DWS with modifications.

Each revision of federal drinking water standards has been in response to changed needs and new insights. For example, when the first federal water standards were written, viruses were poorly understood. Even today, EPA's Division of Water Supply says there are great gaps in health specialists' knowledge about viruses—which ones can survive in drinking water, how they can economically and routinely be detected and identified, and how standard water supply treatment affects them. Nor are the long-term effects of many chemicals and radio-active materials in drinking water fully understood. Federal DWS, therefore, are set at levels that—according to present knowledge—should produce no known immediate effects and only minimum effects after longterm (lifetime) exposure.

The DWS, last revised in 1962, specify procedures for surveillance and testing, criteria for source selection, treatment and operation, and limits for bacteria, chemicals, turbidity color, and odor. A new revision now being prepared will include limits for mercury, pesticides, and kinds of bacteria not previously covered.

Biological quality

Pollution from human sewage is the greatest known health hazard of drinking water, because most of the dangerous bacteria and viruses present in water come from people. No easy test for viruses has yet been developed. To test

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separately for all the different kinds of dangerous bacteria that may be present in drinking water would be a formidable job. Instead, as a single measure of danger, the DWS require testing for *coliform bacteria;* which are not usually dangerous themselves but are common in water polluted by animals or humans and so serve as indicators that dangerous bacteria are present. To be safe, the water supply should average no more than one coliform colony per 100 milliliters of water examined in any one month.

The DWS require frequent sampling and testing of the water from all parts of the system to determine whether or not coliform bacteria are present. For example, the operator of a system serving 2500 people or less must take a minimum of two samples a month. The operator of one serving one million people must take a minimum of 300 samples a month.

The DWS revisions EPA is now preparing will require a *bacterial plate count,* which measures a bacterial population other than coliform bacteria. A high count (more than 500 organisms per milliliter) indicates unacceptable water quality.

Chemical quality

Limits for 18 specific chemicals are included in the DWS now in effect. Fertilizers, pesticides and herbicides are being introduced into water supplies as a result of agricultural practices. Nitrates, for example, have been a problem in some well water supplies: a serious disease of very young infants called methemoglobinemia is associated with high nitrate concentrations in drinking water.

As the character and quantity of industrial wastes (500 new chemicals per year) has changed, so have the DWS. Because of increasing amounts of mercury compounds in drinking water sources, for example, a limit for mercury will be included in the proposed revision of the DWS.

Physical quality

Drinking water should look clear and should be free from objectionable taste or smell. Although unpleasant *color, odor,* and *taste* are not necessarily dangerous, they are sometimes signs of improperly treated water; therefore they should be cause for concern. At present, their removal is usually a matter of local option.

Color may result from the presence of organic material or of metals such as manganese or iron. Any unusual odor should be viewed as possible evidence of pollution. Possible causes are industrial pollution in the water source or biological growths in the distribution system.

Most of us like to see the bottom of the bathtub when we fill it and we prefer not to see anything floating in a glass of water when we drink it. *Turbidity* or cloudiness may not in itself indicate that the water is unsafe if it is due to harmless material, but insoluble material in the water can interfere with proper disinfection.

Bottled water

Some people turn to bottled water if they don't like the water from the tap. However, the consumer needs to know whether he is really getting something better. Water bottled for drinking should meet the same high standards of safety as other drinking water. As of February 1971, only eight states had issued regulations specifically outlining minimum standards.

The U.S. Food and Drug Administration (FDA), which controls bottled water used in interstate commerce, has only recently proposed standards and labelling requirements for chemical content and bacteriological quality of bottled water. FDA has no authority over bottled water manufactured and sold within state lines.

FROM SOURCE TO TAP

The water supply source

Drinking water should come from the best source available. The supply should be unpolluted, low in mineral content, and adequate in quantity. Development and transportation costs should also be low. Unfortunately, it's getting harder to meet this ideal.

How good?

Large municipal systems usually draw their water supply from surface sources or from combined surface and underground sources; groundwater is now used by

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about 43 percent of our nation's population. Most small systems tap underground sources.

Water from deep wells is less subject to pollution from human activities than surface supplies but is more likely to contain objectionable amounts of dissolved minerals. A community may reject well water free from bacterial pollution and use instead a polluted surface source.

Mineral content is not the only question mark about a water source. People create other problems. Water supply sources are used for fishing, boating and swimming. The purification plant operator must cope with sewage, industrial and agricultural waste, urban storm runoff, and siltation from all sorts of construction activities and both usual and accidental dumping up stream. He must be ready to take suitable action in case of any emergency.

When and if the Federal Water Pollution Control Act Amendments of 1972 are fully implemented, water supply sources should improve because industrial pollutants will be controlled at their source and municipal sewage treatment greatly improved. However, it will take many years before the law is fully operative; the goal for "no-discharge of pollutants into navigable waters" is a goal set for 1985.

How much?

The purity of the source is only one consideration. Quantity is also important. Some cities—New Orleans, for one—use ample nearby sources even though they are heavily polluted. Others, such as Los Angeles, get enough water by bringing it from great distances. Although the true costs are seldom reflected in the price, bringing water a long distance is expensive.

If drinking water were used only for drinking, there would be little difficulty in supplying adequate amounts. For drinking and culinary purposes (cooking, washing dishes, etc.) each person uses only a few gallons a day. For all household purposes, including toilet flushing, laundering, lawn watering, etc., we Americans use 75 gallons per person per day. Adding in all municipal uses in stores, offices and industries brings the national average per capita use to about 160 gallons a day.

Some cities and some industries conserve drinking water by providing separate systems—one for drinking water and one for lower-level uses. The city of Colorado Springs, for example, waters its golf courses and parks with treated sewage effluent.

The water treatment process

The ideal drinking water supply needs no treatment at all to make it safe and palatable. Failing this ideal, which is essentially unattainable today, whatever is wrong with a water supply should be cured in the treatment plant. Regardless of how muddy, how polluted, how bad the taste or smell, or how toxic the chemicals in it, if water is to be used for drinking, it should come out of the treatment plant meeting the federal DWS as a minimum.

Disinfection.—Depending on the raw water condition, the steps to treat raw water for drinking can be put together in various sequences and combinations. But, no matter what the process involved, the most important and final step is disinfection, or chlorination. The right amount of chlorine should be used in a carefully controlled way to provide complete disinfection without causing an unpleasant taste. This process may take as long as 60 minutes for some viruses. For complete protection an adequate amount of chlorine residual should stay in the water all the way from the plant to the tap. Because disinfection is most effective in clear water, water which is muddy or cloudy should go through sedimentation and perhaps filtration before final disinfection.

Sedimentation.—Usually the first step is to add a chemical coagulant such as alum or an iron salt to the water. The coagulant combines with the smaller lighter particles and causes them to combine in a mass for easier removal. Next, the water stands in a settling basin to allow the larger particles to settle out.

Filtration.—If sedimentation does not clarify the water completely or if a coagulant has been used, the water needs filtration. In fact, all surface waters should be filtered. Sand, garnet and anthracite are commonly used as filters. The filters are back-flushed frequently to wash away sediment.

Additional Treatment.—Dissolved minerals, heavy metals, and chemicals—especially organic chemicals—not removed by sedimentation, filtering, and disinfection may cause bad tastes and odors and may affect man's health over the long term. Treatment with activated charcoal is becoming more common as a way of

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removing organic pollutants. Electrodialysis, ion exchange, reverse osmosis, or even distillation can be used if necessary, though all are expensive. The ideal solution is to eliminate the pollutant at the source.

The distribution system

In some ways the distribution system is the Achilles heel of a public water supply. Even if the water is completely safe when it leaves the purification plant, all sorts of things can happen to it on the way to the consumer's tap.

Storage.—When the water leaves the treatment plant it must go to some kind of storage facility. This may be a tank or tanks or another reservoir, but whatever it is it must be carefully protected—covered and located where no contaminated water can seep in. Locating low tanks on a floodplain, for example, would be unwise.

Pressure.—Adequate pressure and tight connections are important. Problems sometimes arise when a water system is extended. If mains cannot carry ample water for both new and old connections, pressure in remote parts of the system will drop.

Pipes, Mains, and Lines.—The pipes themselves should not introduce lead, zinc, asbestos, or harmful chemicals into the water. Material used to caulk joints should not harbor bacteria. The system should have no dead ends where water can stagnate and bacteria or other organisms can grow. New lines should be disinfected before they are put into use. Cross-connections between drinking water supply pipes and pipes carrying other waters are a danger. Such cross-connections should be avoided, whether they are between the water supply lines of a community using a dual water system or between pipes in a home, business, or industry. Where plumbing is improperly connected and backflow from sink, toilet, shower, dishwasher, or clotheswasher can enter the drinking water supply pipe, a health hazard exists.

The Council on Environmental Quality has reported that even though inner city residents are delivered the same water as any other urban resident, they frequently face added problems. Water pipes in inner city housing are sometimes old and made of lead (still permitted by a number of plumbing codes). Where water is acidic, it reacts with the pipe to release lead. Under such conditions, water containing dangerously high levels of lead has been found in inner city areas of Boston and Chicago. A simple solution would be to reduce the acidity of the water that flows through the pipe.

Individual supply systems

About 50 million Americans, one-quarter of our people, live in rural areas where they draw their water supplies from wells, springs, rainwater catchments, or other individual sources. According to the 1970 census, about 20 million of them lacked full plumbing facilities in their homes. Although individual wells also need testing and surveillance, well water is seldom tested unless the owner takes the initiative. EPA estimates that more than 40 percent of U.S. individual water supply sources are polluted.

Water from a well or spring can have a pleasing taste and clarity yet be unsafe. Wells located and built improperly can be contaminated by inflow of surface or ground water. For safe well or spring water there must be no infiltration of sewage from privies, cesspools, septic systems (tank and drainfield), or lagoons. Nor should there be caves, sinkholes, open abandoned borings, improperly sealed wells, fissures or faults in the rock overlying the aquifier.

Lack of safe running water in the households of poor rural families contributes to their many problems. Chronic illness caused by bad drinking water taken from unsafe sources can reduce vigor and produce lethargy. Inadequate supplies lead to other hardships too—having to haul water long distances, pay high prices for water, wear dirty clothes, stay home from school. These families need help in establishing safe wells or small community systems.

THE ROLE OF GOVERNMENT

Who should set standards? How should they be enforced?

To assure consistent quality, government must exercise control over all drinking water supplies—public systems, individual systems, bottled water. To exercise this control, government needs legal authority to set standards and regulations; it also needs legal authority and sufficient funding to enforce those standards.

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The local role

Local governments or water districts or authorities now plan, construct, staff, operate, maintain, and meet emergencies in 80 per cent of U.S. community water systems. The other 20 per cent, investor-owned systems that make a profit from selling their water to localities, are subject to the same local and state regulatory supervision as municipally-owned systems. Local governments, municipal or county, should make sure that all waterworks meet strict health requirements, satisfy all state and local regulations, and provide service for all entitled to it.

The state role

States may—and often do—share with or delegate drinking water supply responsibilities to local governments. One result is a blurring of local and state roles.

Key functions of state health or environmental departments are to establish—

DWS (federal or stricter) to cover quality, surveillance, source development, and facility construction

planning requirements

construction codes for well-drilling and plumbing systems

certification requirements for operating, laboratory, well-drilling, and plumbing personnel.

To carry out these functions, state agencies responsible for drinking water—or local agencies to whom these functions are delegated—need authority and funding to—

issue permits for community water supply system construction and for well-drilling

certify and train water system operators and well-drillers

routinely inspect water supply systems from source to tap and facilities where water is bottled

apply cross-connection control ordinances

provide laboratory facilities or certify other public or private laboratories to analyze water samples

maintain a competent technical staff as trouble-shooters

impose penalties for violations.

Routine inspection or surveillance is one of the most important enforcement powers. States find such surveillance a problem. On the one hand, legal authority of some states is limited to community water supply systems. Semi-public systems (serving parks, motels, schools, hopitals, etc.), individual systems, and bottled water are left out. On the other hand, many states delegate surveillance duties to local governments and never check to see how the job is done.

According to the USPHS study mentioned earlier, 79 percent of the 969 systems surveyed had not been inspected by state or county officials in the year prior to the study. And 56 percent of the chief operators did not remember when, if ever, a state or local health department had inspected the physical facilities and reviewed operations. The same study discovered that 77 percent of the plant operators had inadequate training. It also found that a vast majority of the systems lacked cross-connection control ordinances and plumbing inspection programs. The need to upgrade state surveillance programs is underscored by the finding that only *10 percent* of the systems had bacteriological surveillance programs that met federal DWS.

The federal role

EPA is now the federal agency having principal responsibility for drinking water quality. EPA's Office of Research and Monitoring conducts basic research related to drinking water. The Division of Water Supply, part of EPA's Office of Water Programs, has these key functions:

carry out special studies on contaminant levels and methods of surveillance and treatment;

supply technical assistance in training courses, evaluation of state programs, and special investigations;

set federal DWS used on interstate carriers; enforce DWS by periodic inspection and annual certification.

The federal DWS are universally recognized as minimum standards for judging safe drinking water, yet less than half the states have officially adopted them.

Bills now before Congress propose making the federal DWS applicable to ALL

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public water systems in the country. States and localities would still be responsible for setting and enforcing regulations for surveillance, planning, construction, and personnel qualifications.

Unassigned

No level of government now requires that the public be told routinely of the results of water quality tests and about violations of regulations and standards. Yet routine public notification (especially if combined with the right of citizens to sue administrators for failing to perform their duties) could be a most effective means of ensuring compliance.

What kinds of planning are needed?

Sudden emergencies—floods, droughts, accidental spills of toxic pollutants, even earthquakes—can deprive an entire community of its drinking water. And over the long term, metropolitan growth strains existing urban water distribution systems and requires new sources of supply.

Emergency plans should include arrangements for an alternate supply and for special water saving measures. Regional planning and cooperation, for example by inter-connection of water supply systems, can sometimes solve both emergency and growth problems. Site selection and construction standards can be used to promote orderly, development of water supply systems.

How should drinking water be paid for?

At the community level.—What does a safe water supply cost? Surprisingly little, and it is worth every cent to have a safe supply! Charges for municipal water in 1965 ranged from 22¢ per 1,000 gallons in the Great Lakes region to about 43¢ per 1,000 gallons in the Rio Grande basin. These charges covered operation, maintenance, and amortization of investment. In addition to regional variations charges for smaller systems are usually greater than for large systems. In 1965 the U.S. Water Resources Council estimated that it would cost about $190 per person to build a complete water supply system—$36 to develop the source, $42 for treatment and $112 for distribution. User charges, even for expensive systems, are seldom more than the basic telephone bill. Most municipal water systems operate on a self-supporting basis through user charges, based on the principle that "he who uses the system should pay for it." Charges for water service, when averaged together, should be adequate to retire capital bonds, to pay all operating and maintenance expenses, (including the employment of competent personnel), and to develop and improve the system. User charges should not be inflated to cover the cost of other governmental activities. In the interest of conserving water, communities should look carefully at the prevalent policy of decreasing the unit cost for users of large quantities.

At the state level.—States need money, too. State agencies are now spending about $10 million on public water supply systems. EPA studies estimate that states need to spend at least $40 million (or $1,000 for each public water supply) to carry out their many surveillance responsibilities. This estimate doesn't even cover the costs of monitoring semi-public and individual water supply systems.

At the federal level.—The federal government has played a special role in rural areas, where water treatment programs are particularly hard to finance. Federal agencies such as the Farmers Home Administration (FHA), Economic Development Administration (EDA), Department of Housing and Urban Development (HUD), and the Appalachian Regional Commission have *had* programs of grants and loans to local governmental units for improvement or construction of water supply systems. President Nixon's proposed budget for fiscal year 1974 would eliminate funding for the programs in EDA and HUD. Bills now before 93rd Congress propose to beef up federal funding for establishing and upgrading state surveillance programs, special study and demonstration projects, and training and technical assistance.

What training and technical assistance is needed?

Well-trained, competent personnel are needed to build and operate water supply systems and carry out the necessary surveillance. Even the smallest community system needs an operator who knows how to use chlorination and pumping equipment. State health agencies and the larger water supply systems need engineers, biologists, chemists, and others with specialized training.

Proposed federal legislation would provide some federal funds to train technical and supervisory personnel in the operation and maintenance of water

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supply systems. At present, EPA conducts periodic training courses for water plant personnel on a tuition basis.

Congress may decide to provide more federal funds for research to solve problems associated with the removal of contaminants in water. Such research is now going on, and many people think it should be expanded and carried on by the federal government or under federal grants and contracts, to avoid duplication.

CONCLUSION

In a country that prides itself on its competence in public health matters and on its technological achievement, it should not be difficult to produce and distribute safe drinking water. The technology for upgrading the quality of the nation's drinking water is available. It will take money, but the price per capita is small and the benefits to health large.

Despite these favorable factors, people are getting sick from drinking water, some water supply systems are unsafe, and many systems are delivering water lower in quality than we have a right to expect. Worse than all these, some people in this country have no water system at all. Why?

The key is lack of public awareness and support. If citizens make plain that they want and will pay for better drinking water, the task will be immeasurably easier. If you decide that more funds, stronger laws and regulations or increased enforcement and surveillance are needed, make yourself heard. The choice is yours.

ISSUES FOR DISCUSSION

Should minimum federal DWS be compulsory for *all* public water supply systems?

If yes, should the federal government have power to enforce federal DWS? Only if the states fail to act? Not at all?

Should *all* (intrastate and interstate) bottled drinking water be subject to federal standards and regulations?

Is federal financial assistance needed for constructing, operating, and monitoring your water supply system or systems in other communities?

Should the results of water quality tests and violations of standards be publicly announced?

Are you willing to help pay for safe drinking water? How?

Are your community and state doing all they can to assure safe drinking water?

SAFE DRINKING WATER FOR ALL:—WHAT YOU CAN DO

Have you ever wondered . . . Just how good is my drinking water? What does that unpleasant taste or that strong smell of chlorine mean? How can the polluted water in the river possibly be clean enough to drink by the time it reaches my tap? What about the well at the cabin . . . a flood . . . an epidemic . . . a hurricane?

You are not alone in wanting answers to questions like these. Unsafe drinking water can affect health and vigor, even community prosperity. Every day we need safe water for drinking, cooking, bathing, washing—and for recreation.

This Community Guide can help you get answers to your questions about your local drinking water supply system. It suggests *how* you can find out how safe it really is and *what* you can do if you find it needs improvement. This kind of citizen attention is the key to a first-rate drinking water supply system.

GETTING STARTED

Begin at home

Look at your own water

Look at a glass of water or, better yet, a bathtub full of water. Is it clear and sparkling? Does it have an objectionable odor or color? Does it stain your plumbing fixtures? Is the pressure always satisfactory?

Look at your water bill. If your water is metered, it will show how much you are using. If your household uses much more than the national average of 75 gallons (10 cubic feet) per person per day, it will be worthwhile to ask where the water is going. Do you have dripping faucets or undetected leaks? Do you waste water when watering the lawn?

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Providing an adequate supply of safe pure drinking water is a service far more necessary than telephone service. Yet the amount charged per family is usually less than the telephone bill. Countrywide, the average charge was about 40c a thousand gallons in 1972, or 90c per person per month. Do you pay more or less than average?

If you have your own well, most of your monthly cost is probably for electricity to run your pump, but maintenance and amortization of your water supply system are costs too.

Read for background

Few publications have been written for laymen on the subject of drinking water. Nevertheless, an interested person can acquire a working background fairly quickly.

Does your town or county have a League of Women Voters? Each one publishes a "Know Your Community" or "Know Your County" in which you can find out where your water utility is located and how it fits into your local government organization.

Ask your water utility for any printed information on your water supply system.

The League of Women Voters Education Fund's FACTS & ISSUES, *The Water You Drink: How Safe Is It?* (Pub. No. 246, 4 pp. 1973, 25¢) concisely explains the drinking water quality problem.

Two U.S. Environmental Protection Agency (EPA) publications are a must: *Community Water Supply Study, 1970*, in two parts: "The Significance of National Survey Findings," 13 pp., and "Analysis of Findings," 111 pp. This study of 969 systems in 8 metropolitan areas and the state of Vermont found many deficiencies, especially in smaller systems. It will alert you to possible shortcomings to watch for in your system.

Public Health Service Drinking Water Standards and Appendix, Pub. No. 956, 1962, 68 pp.; to be revised 1973. A basic document. Lays out the federal standards (DWS) *required* for water supply systems serving interstate carriers and *recommended* as minimums for all systems.

Three other EPA publications can give you still more on drinking water problems and what to do about them:

Manual for Evaluating Public Drinking Water Supplies, PHS Pub. No. 1820, 1969 (revised 1971), 76 pp. A recommended guide for the origin, treatment, and distribution of water supplies, supplementing the "Source and Protection" portion of the DWS.

Manual of Individual Water Supply Systems (out of print; revised edition to be published fall 1973). Very useful for the person considering development of a well, spring, or cistern. Includes extensive information about source, treatment, pumping, distribution, and storage. Recommended to anyone interested in the general water supply process.

Manual for the Evaluation of a State Water Supply Program (to be published by summer 1973). Recommends legislation states should adopt including delegation of powers to localities. Suggests activities, funding ,and organization.

For a single free copy of each of the above, write to EPA, Water Supply Division, Washington, D.C. 20460.

Join or build a group

You've started this investigation because you had questions on your mind. It's not too soon to be looking around for like-minded people. Have you seen any letters to the editor about water quality? The writers are likely recruits. Have people been asking questions about water at council meetings? Look them up. Civic associations have a real stake in such questions. If no organization is interested in the community's drinking water, form one.

Whatever route you take, divide the work. It makes the investigation easier, more interesting, and more effective. In addition, you will be developing a network of interested, informed people—the basis of any future coalition for working to solve the problem.

The group (committee) will want to learn as much as it can about the community's water supply. By recording answers to questions and adding new questions as they arise, you will be developing a good report on your community's water system. When your investigation is completed, your group will have a factual report to use in deciding what needs citizen attention and in appealing for citizen support.

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Visit the water treatment plant

A tour of your community's water purification plant should tell you where the water comes from, what area and how many people it serves. Large cities often have more than one treatment plant, with regular tours.

Find out about the raw water.—Start your tour at the water source. If the water comes from wells, see if they are protected from flooding and sealed so that foreign material is excluded. If the source is a stream or lake, look at the water intake. It is sturdy and designed to keep out sticks, leaves, or debris? Is there enough water to meet peak demands?

Find out about the treatment process.—Treatment depends on the raw water source. All groundwater (wells) should receive disinfection. Surface sources will generally require additional treatment. What pollutants are removed in each stage of the treatment and in what amounts? Is disinfection provided? Is there a standby chlorination unit, plus reserve supplies of chlorine and other chemicals?

Look at the treatment equipment. Is it clean and free from rust? Is there adequate space for cleaning and maintenance? Is solid waste generated at any stage? If so, is it washed back into the river, dumped somewhere, recycled, or what?

Find out about storage and distribution.—Where does the water go after treatment? To a covered reservoir? Is there enough storage capacity to provide a reserve for all reasonable demands? For an emergency? Do the storage facilities protect the quality of the finished water? Is there a program to detect and correct improper piping connections that might allow contaminated water to enter the distribution systems? What is the water pressure in the higher areas of the community? It should be at least 20 pounds per square inch (psi).

Find out about the laboratory.—Be sure your tour includes a visit to the water plant laboratory and the offices where records are kept. Compare what you are told about your drinking water with the maximum contaminant levels given on pp. 1–9 of the *Public Health Service Drinking Water Standards* (see "Read for background" above).

Look at the bacteriological record for the last year. Were the proper number of samples analyzed *each* month? Did the bacteriological quality comply with the federal DWS? How frequently is the chlorine residual determined at the treatment plant and throughout the distribution system? Is there *always* a detectable residual, even in the most distant part of the system?

Ask to see the results of the most recent *complete* chemical and physical analysis. Does the treated water throughout the system meet *all* of the limits (bacteriologic, chemical, physical) in the federal DWS?

At what points in the water supply system (from source to tap) are samples taken? If samples are not analyzed in the treatment plant laboratory, where are they tested? What precautions are taken to make sure the samples arrive at the laboratory within 30 hours in satisfactory condition, especially in hot weather?

Find out about inspection.—When was the treatment plant last inspected by a representative of the county or state government? Was a written report prepared? Is it available for review? Are all plant operators trained for their jobs and certified by the state? Did the state health department certify the bacteriological and chemical laboratories used? Does the system supply water for interstate carriers? If so, is it approved, provisionally approved, or prohibited by the state or EPA? When was it last inspected by EPA?

Find out about public information.—Is there a program for letting the public know how good (or how bad) the water is? Is a comparison with federal or state DWS made public regularly? What arrangements are there for public notification in case of emergency? What *is* an emergency? Is "emergency" defined by law or regulation?

Learn about wells, springs, cisterns

If you or your fellow citizens live in a rural area, you have a more direct incentive for making sure that the water you drink is safe.

Find out: How do you have the water tested? How often should it be done? Is the well properly protected from surface or underground sources of pollution? If there are septic tanks in the neighborhood it is especially important to be sure the well is not contaminated.

Where is the nearest state-certified laboratory for routine testing? How should samples be submitted? If you can't get satisfactory answers from the county health officer, phone or write the state health department directly. What is the state's surveillance program for wells? Is it being carried out?

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Find out: If you are building or renting a home in a suburban or rural area and have your own individual water supply, find out how your system and your neighbors' will be affected by increasing population. It is not too soon.

You may want to band together with your neighbors to develop a community water system. The county supervisor of the Farmers Home Administration of the U.S. Department of Agriculture can tell you how to apply for a federal loan to build such a system; he coordinates activities with other governmental agencies that can offer assistance. Look in your telephone book for the county agricultural extension agent, who will know how to get in touch with the FHA in your area, or write to the FHA, U.S. Department of Agriculture, Washington, D.C. 20250 for his address.

Find out: A concern for others less fortunate than you is a sign of a good neighbor. Are there any families in your county who lack a safe drinking water system on their own premises, forcing them to use a river directly or to haul water over long distances? Can they get financial aid to put in a safe individual system? What new laws or regulations are needed to help them?

WHO'S IN CHARGE?

As you delve into the facts about the quality of drinking water, you will also be looking at state and local responsibilities. A checklist of "Recommended State & Local Responsibilities" is presented in the accompanying box. Because state responsibilities are often delegated to local governments, you may find yourself shuttling back and forth between the agencies at each level of government to pin down *authority* and *responsibility* for the duties listed. Whatever the governmental setup in your locality and state, it is essential to find out enough to visualize clearly who is in charge of each responsibility listed in the box.

The $64 questions: which level of government has the legal authority to perform the duties listed on the chart? Are the duties actually carried out? Talk with key people in each agency.

Find out: What standards and criteria are used? Are they adequate? Enforced? Be persistent. You have a right to know whether the job is being properly done.

Watch for meetings of legislative or administrative bodies—state or local—concerned with drinking water. For example, your city council may be holding hearings to increase your water service rates. The planning commission or health department may be holdings hearings on plans for a new plant to treat drinking water or for construction of new water mains.

The local level

Start close to home. Examine the table of organization in your city or county executive's office to find out which agencies are responsible for what functions on the list of Recommended State and Local Responsibilities. The local water department or utility usually operates the system and sends out your water bills. The health department usually inspects the public water system. The building department may be enforcing the plumbing code; the public utilities commission may be setting your water service charges.

The water department

Whether your drinking water is supplied by a government agency, a water authority, or an investor-owned utility;

Find out: Who owns the system? Who is in charge? What area does it serve? Is service available to everyone in the area or are there places within it where city water is not available? Is a good map of the system available? Are all parts about the same age? Is there a program for rehabilitating older sections as needed? Who decides how, when and where to service new areas?

Find out: Are records available to show how the water delivered to all parts of the system compares in quality with the water leaving the treatment plant? How much of the water leaving the plant is actually delivered?

Find out: How many people work for the water department? Run the treatment plant? Duties? Require training? What is the annual budget? How is money allocated? Does the budget include the cost of running the treatment plant (operating costs as well as ovehaul and replacement of equipment, plant modernization and expansion)? Does it include expenses for developing and protecting sources? What capital expenses are contemplated in the near future and how will

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they be funded? Do revenues from water rates (user charges) cover all these costs?

Because most water is paid for by user charges or taxes, it is important to know who decides how the money is spent. There are two types of costs, the *regular operation and maintenance costs* and the *capital expenditures* for new plant equipment, servicing new areas, and developing new sources.

Find out: Are revenues from water rates used to support activities or programs that are unrelated to the water supply program? Are any users exempt from user fees? If the water utility is a private investor-owned utility, what percent profit does it make? (Ask to see a recent financial statement.)

The health department

In maintaining a safe water supply, the surveillance role of the health department is particularly important. If you have not been able to get bacteriological and chemical records at the treatment plant or the water department office, you should be able to get them from the health department. Persist until you are satisfied.

Find out: Are the regulations on the checklist enforced?

The state level

Many responsibilities reside with the state. In more cases than not, such duties as standard-setting and surveillance are placed in the state health department, state environmental department, or state department of natural resources. Start by getting copies of state laws and regulations, so that you can see for yourself whether the state health department has adequate authority to carry out its functions.

Like the local level, the state level needs well-trained staff, sufficient authority, and adequate funding.

Find out: directly from a key person in the enforcement division of the responsible state agency: Does the state agency have enough people to carry out the needed surveillance? Are they properly trained? What is the health department's budget for activities relating to drinking water? What does that amount to on a per capita basis? Where does the funding come from?

Find out: Does the health department have any control over source development, especially for new supplies for newly developing areas? Are state or federal funds provided for developing water supplies for new areas?

The Federal level

You should also keep abreast of the federal government's role in providing safe drinking water.

If your local system serves interstate carriers or if a special study has been requested, EPA may have information on the quality of your local water supply system and your state water supply program. To date, evaluations of Kentucky, Ohio, Tennessee, and Wyoming water supply programs are available; more are expected to follow shortly.

Sometime in 1973 EPA will issue revised DWS, which will be published in the *Federal Register* in proposed form for public comment and later, after revision, in their final form. Write to the Division of Water Supply, EPA, Washington, D.C. 20460 or to your EPA regional office for copies of the revised standards, when available.

If there is a federal facility in your community, find out if it adheres to federal DWS (even though not required to) and how it carries out surveillance.

Keep up with national legislative developments. Federal legislation on safe drinking water may be passed sometime in 1973. Key bills for safe drinking water legislation have been proposed in the 93rd Congress by Sen. Warren Magnuson, Chairman, Senate Commerce Committee (S. 433), by Rep. Paul Rogers, Chairman, Subcommittee on Public Health and Environment, House Interstate and Foreign Commerce Committee (HR 1059), and by the Administration HR 5368). All these bills would require federal DWS for all community water supply systems over a certain size and for all federal facilities .They would also authorize EPA to enforce DWS if states fail to act or in cases of serious risk to health. The proposals differ in what kinds of water systems must meet federal DWS. what methods of enforcement should be used, and what federal financial assistance should be provided.

One bill would allow EPA to enforce federal DWS for individual water systems serving the traveling public (semi-public systems) if EPA finds them a

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health hazard. This bill also requires a state surveillance plan before the state is allowed primary enforcement authority, with periodic federal audits to determine compliance with the plan. Two of the major bills would guarantee citizens the right to sue violators and to sue EPA for failing to perform mandatory duties. One bill would require any violator of federal DWS to notify the consumer, state, and EPA of the violation; failure to do so would subject the violator to stringent penalties.

Bills introduced by Sen. Magnuson and Rep. Rogers propose establishing federal grant-in-aid programs to develop and upgrade state drinking water programs and to demonstrate new water supply technology, in contrast the Administration bill would cancel existing grant authority for research and training and offer no grants for demonstration or for state programs.

Congressional committee hearings are an invaluable source of information. Many of the ideas and arguments presented at the hearings held during the 92nd Congress will reemerge when the 93rd Congress considers this legislation. The printed hearing records are free on request from your congressman or from the committee.

For information on bills, hearings, or provisions of the law (if passed) write to—Subcommittee on the Environment, Senate Commerce Committee, Room 5205, New Senate Office Building, Washington, D.C. 20510 or—Subcommittee on Public Health and Environment, House Committee on Interstate and Foreign Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515.

If a law is enacted EPA's Division of Water Supply will issue regulations to implement the legislation. Watch the *Federal Register* for the draft regulations and, later, for the final regulations, or write to the Office of Public Affairs, EPA, Washington, D.C. 20460.

WORKING FOR SAFER DRINKING WATER

If you've worked your way through Parts I & II, you and your co-workers know a great deal about the drinking water supply in your area and have the data for a report on your findings. It is time for your group to decide where improvements should be made.

Decide the priorities

You will probably have discovered more than one change or improvement you want. Will it be more local and state funding * * * better surveillance * * * improved service for either urban or rural poor families * * * decisions on new sources to serve a growing population * * * land use decisions * * * national legislation?

Whatever the problems in your community, set priorities and a plan of action. Decide how to work for changes in laws, regulations, or policies.

Enlist support

It's conceivable that your group can, by itself, take whatever citizen action is needed. It's much more likely that community support and action is needed. If you've been wise, you will have been drawing more and more people into the study—people from all segments of the community, academics, experts, representatives of a wide variety of community groups. Now is the time for this working group to enlarge its base.

If there are environmental coalitions in your community, get them interested in the local, state, and federal issues on drinking water. Or start an informal ad hoc committee, coalition, or task force with other community organizations—to share background information, to alert each other about issues, and to arouse citizens interest.

Share your findings and your recommendations with the community. Use the news media, mailings, public information displays, documentary films, slide presentations.

Develop a speakers bureau for local organizations—church groups, garden clubs, Jaycees, Lions, Rotary, AAUW, civic organizations and others. Draw on members of the ad hoc group who have a flair for speaking or use some of the people you went to for the facts.

Run workshops to help people become more knowledgeable.

Keep abreast of information by attending meetings of legislative bodies and administrative agencies concerned with drinking water.

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Make yourselves heard

Present your case to the proper legislative or administrative bodies.
Prepare model legislation.
Present your case formally at hearings.
Write letters to legislators, the governor, and agency heads.
Be prepared when support or opposition to plans and proposals is needed quickly.
Make appointments for interviews with your congressmen and legislators, when they are home, to explain your interests and viewpoint.

Follow through

Back funding efforts necessary to supply services you want.
Monitor, once changes are made.
Citizens pay for safe drinking water, consume the product, and elect officials responsible for assuring this basic service. You can make a vital difference in guaranteeing a safe, adequate supply for your community.

Checklist of Responsibilities for Drinking Water

Present federal responsibilities [1]

(1) Establish federal standards for drinking water used on interstate carriers. Enforce standards by periodic inspections, annual certification. (EPA)
(2) Establish quality standards and labelling required for bottled drinking water shipped or used on interstate commerce. Inspect and accept manufacturing plants and sources for bottled drinking water used on interstate carriers. (Food and Drug Administration, U.S. Dept. of Health, Education and Welfare)
(3) Conduct research on health effects of contaminants, on better testing methods, on new treatment processes and on the economics of drinking water (EPA)
(4) Provide technical assistance, including geologic and water resource information. (EPA; U.S. Dept. of Interior)
(5) Provide training courses for operating personnel. (EPA)
(6) Provide financial assistance for construction and improvement of water supply systems in disadvantaged areas. (Farmers Home Administration of U.S. Dept. of Agriculture; Appalachian Regional Commission; programs subject to change)

Recommended state and local responsibilities

Do your state and local governments carry out these responsibilities?

The degree to which drinking water responsibilities are divided between state and local agencies varies greatly from state to state. Some of the functions are not carried out by either state or local governments. However, the following responsibilities are generally accepted as essential elements of an effective state water supply program.

A single state administrative agency should *establish*—

(1) Drinking water standards (federal DWS or stricter) to cover public and individual water supply systems and bottled water. These should include—
quality standards for constituents in drinking water.
surveillance requirements for: sampling; regular, comprehensive inspections of facilities; laboratory services; cross-connection control.
standards and criteria for source development and for treatment plant and distribution system design, materials, equipment.
(2) Comprehensive community water planning requirements for reviewing and relating water supply systems to local land-use plants and controls, for consolidating small systems, for supplying hydrologic information, for financing water supply systems, and for developing emergency plans.
(3) Construction codes for well-drilling and pump-installation, for plumbing systems—particularly cross-connection control.
(4) Certification requirements for water treatment plant operators, laboratory personnel, well-drillers, plumbers.

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[1] See page 4 for proposed legislation to broaden the federal role.

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(5) Procedures for routinely notifying the public about data from water quality sampling and about violations.

(6) Penalties for noncompliance with all laws, regulations, and policies.

A state or local agency should be authorized to *enforce* the regulations by:

(1) *reviewing* plans and *issuing* permits for community water supply systems and well construction;

(2) *certifying and training* water supply operators and well-drillers;

(3) *routinely inspecting*—

water quality for bacterial and chemical contaminants throughout the system

laboratories for bacteriological and chemical analysis

entire community water supply systems (at least once a year)

semi-public water supply systems (serving motels, rest stops, parks, hospitals, schools, etc.)

individual water supply systems

bottled water sources and manufacturing plants

new and repaired plumbing for possible cross-connections

(4) *providing* laboratory services and technical assistance to local agencies and consumers on request;

(5) *imposing* penalties for violations of laws, regulations, and policies;

(6) *reporting*—

type, number and location of water supply systems to state

violations of regulations to consumers through an emergency alert system.

results of all water quality sampling to consumers.

Finally, in order to keep track of drinking water enforcement, both state and local agencies should *maintain* accurate, up-to-date *records* of construction, maps of the distribution system, inspections, sampling, violations.

Senator HART. This concludes the testimony scheduled to be received in connection with the consideration by the committee of the bills that are intended to safeguard our water. We will hold the record open for an additional 10 days to permit receipt for the record of material that has been promised, and for reactions that we have asked for.

For Senator Magnuson and the others on the committee, I want to thank everyone who contributed to this record today.

I have never found a bookmaker around here whose odds were worth worrying about, but I would hope that if there were such a bookmaker, that the odds would be very favorable toward enactment in this session of the legislation we are considering.

I agree with—I think it was Dr. Dworsky, or one member of the panel, who reminded us that we do have relative to the rest of the world a fine water quality. This is to relieve those who think we are unduly alarmed. But as that panel and all of us would agree, the question really isn't what we have done so much as what we could do with what we have.

I would hope that we will do better.

We shall adjourn.

[Whereupon, at 5:22 p.m., the hearing was adjourned, subject to the call of the Chair.]

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ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

DARTMOUTH MEDICAL SCHOOL,
Brattleboro, Vt., May 25, 1973.

Senator PHILIP A. HART,
Chairman, Subcommittee on the Environment, Senate Committee on Commerce, U.S. Senate Office Building, Washington, D.C.

DEAR SENATOR HART: On Mike Brownlee's suggestion, I am sending you a summary of our experience in feeding low doses of some 35 trace elements to rats and mice for life. These data may be useful guides in the proposed hearings for setting the limits for quality of potable water, according to the Safe Drinking Water Act of 1973.

In no way are these data to be construed as recommending actual limits. They merely show which elements showed recondite toxicity in small mammals in the doses given and which did not, as far as could be ascertained.

Another table from an article now in press (Recondite Toxicity of Trace Elements, Academic Press, 1973) indicates present levels in Municipal waters and their contribution to the total ingested in the diet. This table provides a frame of reference for water-borne elements. I believe that present Public Health Standards are generally adequate except:

Cadmium at 10 ppb is too high. It provides 14% of the dietary intake. Even small amounts of cadmiums cause elevation of blood pressure. An attempt should be made to keep it at 5 ppb. or less.

Some standard for antimony, a low one, should be provided. This is a toxic metal, causing heart attacks in rats.

Standards for the Essential elements, except selenium which is toxic, are unimportant and can be based on other characteristics (taste, color, staining of enamel) than toxicity.

The present standard for barium may be too liberal, as it is definitely toxic at 5 ppm to male rats and mice, in our experience.

Sincerely yours,

HENRY A. SCHROEDER, M.D.,
Professor of Physiology Emeritus.

Enclosure.

TABLE 58.—INCREMENT OF BULK AND TRACE ELEMENTS IN WATER TO TOTAL DAILY DIETARY INTAKES

Elements	Water		Food (milligrams per day)	Percent from water	
	Median (milligrams per day)	Maximum [1] (milligrams per day)		Median	Maximum
Essential:					
Calcium	52	100	800	6.5	12.5
Magnesium	12.5	40	210	5.9	19.0
Sodium	24	100	4400	0.5	2.3
Potassium	3.2	10	3300	0.09	0.3
Vanadium	<0.008	0.02	2	0.6	[3] 1.0
Chromium	0.001	0.01	1.0	1.0	[3] 10.0
Manganese	0.01	0.2	3	0.3	[3] 6.7
Iron	0.09	0.3	15	0.6	[3] 2.0
Cobalt	0.006	0.01	0.3	2.0	3.3
Nickel [2]	0.005	0.02	0.4	1.3	[3] 5.0
Copper	0.02	0.2	2.5	0.8	[3] 8.0
Zinc	0.5	2.1	13	3.8	[3] 16.2
Selenium	<0.02	----------	0.15	<13.3	----------
Fluorine	0.4	1.0	1.8	22.2	55.5
Molybdenum	0.003	0.02	0.34	0.9	5.9
Nonessential:					
Silicon	14.2	60	>20	>71.0	[3] 300
Aluminum	0.1	1.0	45	0.2	[3] 2.2
Barium	0.09	0.76	1.24	7.3	[3] 61.3
Strontium	0.22	1.0	2	11.0	[3] 50.0
Boron	0.05	0.2	1.0	6.0	20.0
Bismuth	Trace	----------	0.002	(3)	----------
Beryllium	Trace	----------	0.00001	(3)	----------
Antimony	Trace	----------	<1.0	(3)	----------
Lead	0.007	0.02	0.41	1.7	[3] 4.9
Lithium	0.004	0.1	2.0	0.2	5.0
Silver	0.0005	0.001	0.07	0.7	[3] 1.4
Tin	0.002	0.005	4.0	0.05	[3] 0.1
Titanium	<0.003	0.01	0.3	0.1	3.3
Uranium	0.0003	0.004	1.4	0.02	[3] 0.3
Cadmium	0.005	0.04	0.07	7.1	57.1

Source: Data from Durfor and Becker(76), Howell(77), and Schroeder(74) at 2 l per day.

[1] Maximum value for 87-98 percent of cities. Individual values can be much higher in very hard water areas.
[2] Nickel is possibly essential for mammals, but unproven.
[3] Elements poorly absorbed by the gastrointestinal tracts, i.e. <10 percent.

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TABLE—TOXIC AND NONTOXIC LEVELS OF TRACE ELEMENTS IN DRINKING WATER, LIFE-TERM EXPOSURES TO RATS AND MICE IN METAL-FREE LABORATORY, AND PRINCIPAL SIGN OF TOXICITY

Element	Dose (parts per million)	Rats	Mice
Toxic in some aspect:			
Cadmium	1	Hypertension, enzyme function. Life span shortened (5 p/m).	Life span shortened.
Lead	25	Life span shortened, heart disease, aging.	Do.
Antimony	5	Life span shortened, heart disease, serum glucose lowered, cholesterol.	Life span decreased, females.
Barium	5	Life span shortened, males	Life span shortened, males.
Beryllium	5	do	No effect.
Methyl Mercury	5	Not done	Life span markedly shortened.
Titanium	5	do	Life span shortened.
Tungsten	5	Life span shortened, males	Not done.
Selenium(ate)	3	Cancer. Selenite very toxic	Life span shortened, females. Amyloidosis.
Tellurium	2	Elevated serum glucose	Life span shortened.
Arsenic	5	No effect	Do.
Tin	5	Life span shortened, females. Liver and kidney disease.	No effect.
Gallium	5	Not done	Growth suppressed, life span shortened.
Rhodium	5	do	Mildly carcinogenic.
Palladium	5	do	Do.
Scandium	5	do	Growth suppressed.
Indium	5	do	Do.
Yttrium	5	do	Do.
Chromium(VI)	10	do	Do.
Germanium	5	Life span shortened. Liver disease	Life span shortened, males.
Niobium	5	Growth enhanced, males	Life span shortened, females. Fatty livers.
Nontoxic:			
Vanadium	5	Lowered cholesterol, life span extended, females. Essential.	No effect.
Chromium(III)	5	Lowered glucose and cholesterol. Life span extended. Essential.	Do.
Manganese	10	Well tolerated, essential	Do.
Aluminum	5	No effect	Do.
Fluorine	10	Not done	No effect. Essential. Growth enhanced, females.
Zirconium	5	Little or ho effect	Slight decrease life span.
Nickel	5	No effect	No effect.
Zinc	50	Well tolerated, essential	Do.
Copper	5	do	Do.
Cobalt	1	do	Do.
Molybdenum	50	Well tolerated. Low doses essential	Do.
Mercury (Cl)	5		No effect.
(Methyl)Mercury	1	No effect to 18 mo	Do.

Note.—These results were on life-term exposures of 54 male and 54 female mice, and 52 male and 52 female rats, to element in drinking water, each group benig compared to litter mate controls of the same number. They represent 13 yr experience. The data show the levels found toxic or inert. Sections were made of tissues and anlyses for trace elements. Only 3 were carcinogenic: selenate (strongly), rhodium (weakly), and palladium (weakly). Many of the toxic ones accumulated in tissues: titanium, germanium, arsenic, selenium, zirconium, niobium, molybdenum, cadmium, tin, antimony, methyl mercury, lead: analyses are incomplete for barium, beryllium, boron, aluminum, tungsten.

NATURAL RESOURCES DEFENSE COUNCIL, INC.,
Washington, D.C., May 31, 1973.

Re Safe Drinking Water Act of 1973, S. 433.

The Honorable PHILIP A. HART,
Chairman, Subcommittee on Environment, U.S. Senate Commerce Committee, Washington, D.C.

DEAR SENATOR HART: Thank you for your letter of May 16, 1973, which requests the views of the Project on Clean Water of the Natural Resources Defense Council on pending legislation to protect the nation's public drinking water supplies. Your Subcommittee presently is considering S. 433, introduced by yourself, and S. 1735, introduced by Senator Magnuson for the Administration. The following comments are directed to legislative provisions only. Com-

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ments which expose the crisis in the quality of our present drinking water have been submitted for your consideration by Mr. Ralph Nader and others.

Relationship to the Federal Water Pollution Control Act

Historically, the problems of water pollution and maintenance of safe drinking water supplies have been considered as separate issues. However, with the creation of the Environmental Protection Agency in 1970 and the inclusion of both the water pollution control office and the water supply offices in the same agency, new opportunities are present for the consideration of these two issues as manifestations of the same problem. The source of the pollution of our drinking water supplies for the half of the nation that derives its drinking water from surface supplies is evident. Industrial and municipal direct dischargers, as well as agricultural runoff, are the sources for the contaminants of immediate concern in the regulation of drinking water: organic and inorganic chemicals, produced at the rate of over 500 per year; toxic metals dumped into our waterways by industrial operations; and bacterial contamination from inadequately treated municipal sewage. It is vital that the Congress realize that the ultimate answer to the problem of assuring safe drinking water supplies relies on the absence of these contaminants in our waterways. The answer in the long run is not to provide every-more exotic technologies to remove these contaminants after they have been dumped into the water. Drinking water legislation must do everything possible to ensure the success of the national goal of the Federal Water Pollution Control Act Amendments of 1972: that "the discharge of pollutants into the navigable waters be eliminated by 1985." Section 101(a).

Therefore, you might want to consider legislative provisions such as the following:

(1) Public water supply utilities must be given the right to sue polluters of the drinking water supply to force polluters to treat their wastes to eliminate dangerous contaminants. This would allow a legal cause of action to force industries to install better than "best practicable control technology" as required by the FWPCA by July 1, 1977.

(2) The public should not be forced to pay twice to clean up pollution—first, higher prices from industries that pass on the cost of pollution control to the consumer and second, higher prices in water bill assessments designed to allow more sophisticated treatment of the same industrial residue. Therefore, public water supply utilities must be given the right to assess charges against those polluting the water to ensure that the pollution is reduced or paid for by those causing the necessity to treat water before suitable for drinking water purposes.

These proposals might begin to ensure the coordination of the water pollution control and the safe drinking water supply efforts at both the Federal and state levels.

In addition to the proposals outlined above, the drinking water control legislation should assert clear controls over groundwaters and their potential pollution. Half of the nation's drinking water is derived from groundwater sources, whose potential for contamination is even greater than surface waters due to the irreversible nature of the groundwater pollution once it occurs. The FWPCA does not do all that it might in controlling the disposal of pollutants into groundwaters, and a clear national policy to regulate the disposal of pollutants into any groundwaters used or potentially to be used for drinking water supply is necessary.

National Standards

The use of the qualification to "reasonably protect the public health" in the establishment of national drinking water standards in Section 4 of S. 433 is unnecessary and potentially harmful. The deletion of the word "reasonably" is preferable throughout the section. The use of "reasonably" only inserts a discretionary, potentially vague phrase, into a process whose sole concern must be the protection of public health—period. Neither the Clean Air Act of 1970 nor the FWPCA of 1972 contains this qualifier in the establishment of national standards. It only puts the burden of proof upon the public to show unreasonableness as opposed to demonstrating the lack of any protection of the public health. This requirement essentially already exists in the Administrative Procedures Act. Since this is the case, further demonstrations of reasonableness can only serve to obscure the real issue—the protection of public health.

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The requirement of Section 4(d) to review the national standards every three years is commendable, but such review should be accompanied by mandatory public hearings such as hose required in the review of water quality standards under the FWPCA. Section 303(c). Public hearings must also be required before the initial promulgation of such standards.

Technological Requirements

Evidence is accumulating at a rapid rate that the presence of viruses, toxic metals and other organic chemicals is proliferating at a rapid rate in the discharges of pollution sources and appearing as well in treated drinking water supplies. Mr. Ralph Nader has testified to the urgency of the control of these contaminants not often regulated in the past, nor even monitored for in public drinking water systems.

It is vital that the antional drinking water standards provide for the use of the best available technology in reaching these standards and in protecting the public health for those contaminants which are not the subject of specific standards. This concept would resemble in part the technologically-based effluent requirements of the FWPCA whereby industries must achieve best practicable control technology by 1977 and best available control technology by 1983. The drinking water legislation is not faced with the proliferating categories of industrial and municipal sources which must be regulated in the FWPCA. Drinking water supply treatment facilities constitute one identifiable source and can be regulated with more uniform technological guidelines.

Therefore, the Project would like to suggest that the legislation call for the establishment of performance standards in the construction, operation and monitoring of treatment facilities that will insure the use of the best available technology to be defined by the Administrator of EPA in a series of guidelines to be promulgated with the national drinking water standards. This concept is particularly important with respect to contaminants such as viruses and organics which will not be regulated specifically by national drinking water standards as those standards are presently being considered by EPA. The technology exists to effect a remarkable degree of removal of these dangerous substances. For example, activated carbon filters have been shown to be economically feasible and readily available if localities are forced to consider such treatment technologies. The following amendments to S. 433 might accomplish this proposal:

(1) Strike Section 4(b)(1)(C) and insert the following: "Shall include performance standards for adequate construction, operation, maintenance, surveillance and monitoring of public water supply systems to assure a drinking water quality which meets the requirements of (A). Such performance standards shall reflect the application of the best available technology as determined by the Administrator under Subparagraph (c)(2) and (c)(3) of this Section."

(2) Strike lines 14 and 15 of Section 4(c)(2) and insert the following: "Information and data on the best available technology for the control of the con-".

(3) Insert a new Section 4(c)(3) as follows: "Information and data which reflect the best available technology in the control of drinking water contaminants which may not be the subject of national drinking water standards, but which are determined to be contaminants subject to control through the application of best available technology."

It is hoped that these technological requirements will provide for a much-needed upgrading of treatment and distribution systems until the contaminants of most danger and toxicity can be eliminated at their source.

Enforcement

Both S. 433 and S. 1735 contain an enforcement scheme that will probably prove unworkable and costly to the public in terms of time and lack of results.

Enforcement must be a dual responsibility of the federal-state agencies modeled on Section 309 of the FWPCA. This section provides for direct enforcement by the Administrator of EPA upon a violation of the Act *or* a procedure by which the state is notified of the violation and 30 days allowed for the state to act to abate the situation. This dual enforcement scheme would allow the EPA to move directly against violators of a national drinking water standards when it is determined that such direct action is necessary. It also allows for state responsibility when the state has demonstrated its capability and

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willingness to act. The option for direct EPA action must be retained in order to prevent a bureaucratic bouncing of the ball by *requiring* EPA to notify the state and refrain from action until the state so moves.

In addition, the requirements of reasonableness should also be struck from Section 5 of S. 433. The addition of the phrases "unreasonably" and the necessity to prove "unreasonable endangerment to public health" is unnecessary and unwarranted. A violation of the national drinking water standards is by its very definition a threat to public health and additional burdens of proof should not be required. Upon the discovery of a violation the Administrator must be required to issue a notice of compliance with the option of further assessment of civil and criminal penalties if the order is not complied with. These caveats also assume great importance when considered in light of the citizen suit provision of the pending legislation in S. 433. The citizen would have to assume a great deal of burden of proof beyond the actual violation if the requirements of reasonableness are retained in Section 5.

In short, the legislation must take the view that the violation of a national drinking water standard by its very nature constitutes a danger that must be acted upon with no further obstacles to remedial action inserted in the legislation.

Section 6 concerning "Imminent Hazards" is triggered by a reference to "serious risk to health." On what basis do you consider an imminent hazard to exist above and beyond a violation of the drinking water standard? Does this refer to the number of violations from any one source or the violation of a particular standard in such a way as to suppose some extreme danger not alluded to? In any case, the Administrator must have the power to prevent the *use* of the particular water supply system as a part of the remedies allowed him in moving against the violator. If the danger is so real as to require something other than normal enforcement procedures, then this injunctive remedy will be necessary to protect the public health.

Public Participation

The water supply bureaucracy has historically clearly demonstrated its unwillingness to involve or inform the public with respect to the community's drinking water supply. It is often claimed that the public should not be unduly alarmed about its drinking water and that information pertaining to violations or water supply quality will only start a panic among the populace.

It is true that this might happen, but it is also true that this may be the only way in which swift clean-up and protection is assured. In any case, the public has a right to know the status of the water coming out of the household tap and the right to participate in the regulation of the quality of that water. Protection of the public by means of a deliberate policy of ignorance has no place in a democracy.

Therefore, the legislation should promote the concept of public participation and the public's right to obtain information in both a general and specific way. Generally, the legislation should contain a provision comparable to Section 101(e) of the FWPAC which requires the Administrator and the states to encourage, assist and provide for public participation in all aspects of the implementation of the Act.

Specifically, every public water supply system regulated by the Act must be required to furnish an annual report to EPA and the public concerning that facility and containing at least the following information: a comparison of the present water supply with the national standards; any violations that have occurred; the abatement program designed to prevent violations; a comparision of the drinking water supply as it leaves the treatment facility and the water coming from the tap in representative households; the monitoring and surveillance program of the facility and the program to insure quality in the operation of the facility. In addition, opportunity for a public hearing on this report should be offered. The requirements of Section 5 of S. 1735 pertaining to the reporting of violations is to be commended and should be inserted into S. 433 as well.

I hope these comments will prove useful to you, your Subcommittee, and your staff as the legislation moves forward. You are to be commended for your leadership in ensuring the public's basic right to safe drinking water.

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Please consider these comments as part of the hearing record compiled on this legislation.

Sincerely yours,

BARBARA REID,
Project on Clean Water.

U.S. SENATE,
Washington, D.C., June 6, 1973.

Hon. WARREN G. MAGNUSON
Chairman, Senate Commerce Committee,
U.S. Senate.

DEAR MR. CHAIRMAN: I am enclosing a copy of a letter from the Director of the Division of Sanitary Engineering, Department of Health for the Commonwealth of Kentucky.

Mr. Johnson has some very pertinent observations relating to S. 433, the Safe Drinking Water Act of 1973 and I would be most grateful if this could be made a part of the hearing record.

Thank you for your consideration and assistance.

Sincerely,

WALTER D. HUDDLESTON,
U.S. Senator.

Enclosure.

COMMONWEALTH OF KENTUCKY,
DEPARTMENT OF HEALTH,
Frankfort, Ky., April 3, 1973.

Re Safe Drinking Water Act of 1973, S. 433.

Hon. WALTER D. HUDDLESTON,
U.S. Senate,
Washington, D.C.

DEAR SENATOR HUDDLESTON: Your letter of March 6, 1973 regarding the above subject was very much appreciated. The Senate bill appears to be satisfactory, particularly in regard to the appropriations indicated—including the state grants. As a matter of interest, the bill, H.R. 1059, is also good in this respect. I think, however, that as in the case of Kentucky and nine or ten other states which have had EPA Evaluations of their Public Water Supply Programs, all the states should be required, through a provisions, to have similar evaluations by EPA in order for them to become eligible for public water supply program grants provided in the bills. It seems to me that a completely objective survey conducted by EPA would reflect not only the existing status but also the real needs of each state and would establish a firm basis for future assessment of progress made toward achieving EPA's recommendations. The Senate as well as the House bills call only for EPA's approval of state plans. The bills also will require acomplete audit by EPA every three years.

Aside from this suggestion, I would like to emphasize the big discrepancy which is apparent between the Senate and House bills and the President's or Administration's bill. The latter does not provide any funds whatsoever for grants to the State Public Water Supply Programs, and will provide very little additional appropriations to EPA itself. The Administration's bill would be completely unacceptable since we would be right back where we started. Furthermore, EPA will have little hope of expecting states to successfully comply with the National Drinking Water Standards unless it is in a position to provide grants to the states for strengthening their public water supply programs.

It was a real pleasure hearing from you and if I may be of further assistance, please do not hesitate to contact me.

Very truly yours,

NICK G. JOHNSON,
Director, Division of Sanitary Engineering.

AMERICAN ACADEMY OF ENVIRONMENTAL ENGINEERS,
Harrisburg, Pa., June 12, 1973.

The Honorable WARREN G. MAGNUSON,
Chairman, Committee on Commerce, U.S. Senate, Dirksen Senate Office Building, Washington, D.C.

DEAR SENATOR MAGNUSON: In accordance with my testimony on May 31, 1973, in connection with Safe Drinking Water Legislation, I am attaching staff

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comments on Mr. Nader's statements relative to Pennsylvania's public water supply standards. These comments are for insertion into the record.

I sincerely appreciate the courtesy and interest of your Committee.

Sincerely yours,

WESLEY E. GILBERTSON,
Past President, AATF.

Enclosure.

COMMENTS ON NADER TESTIMONY

1. Pennsylvania regulations relating to quality of public drinking water are tied to the U.S.P.H.S. Drinking Water Standards (latest edition—1962). These standards do not have limits for viruses, nor have we promulgated any supplemental standards. We do require disinfection of all public water supply sources which gives significant, if not complete, control of viruses. Not all states require disinfection of all public sources.

2. The U.S.P.H.S. Drinking Water Standards do relate to toxic organics, but not specifically on a chemical-by-chemical basis. The Standards call for limit on sources with Carbon Chloriform Extract (CCE) concentrations in excess of 0.2 mg/1 where more suitable supplies are or can be made available. We concur that such a standard is inadequate. The proposed revisions to the Drinking Water Standards are more specific in listing limits or a number of organic pesticides, CCE, and Carbon Alcohol Extract (CAE). We believe that the states, which do not have the resources to perform the research necessary to develop meaningful standards for toxic organics, must follow the lead of the Federal government in this area.

3. The U.S.P.H.S. Drinking Water Standards include limits for heavy metals which, with the exception of Copper, Iron, Manganese, and Zinc, if exceeded, constitute grounds for rejection of the supply. The Standards include these excepted metals as being constitutents to be avoided if another source of supply is or can be made available.

4. Pennsylvania does not reject the use of ozone as a water supply disinfectant. We approve any disinfectant for which a measurable residual can be maintained as the water enters the distribution system. Ozonation can provide a measurable residual. We have approved one ozone installation in Strasburg, Lebanon County.

The advantage of chlorination is that during periods when coliforms are detected or suspected in the distribution system (flooding, pipeline break, etc.) the disinfectant dose at the treatment facilities may be increased to maintain a residual of free chlorine in the distribution system as a safeguard. Because of rapid dissipation of the ozone residual, this is not possible if disinfection of the supply is accomplished by ozonation. We require either standby chlorination or facilities to chlorinate in the distribution system where ozone is proposed as the primary disinfectant.

5. Pennsylvania has no specific restrictions on use of granular activated carbon for removal of toxic organics. Normally, we would not approve a source where toxic organics are known to be present at hazardous levels. Our design standards conform to the Ten States Standards for Water Works which specify that the ". . . filtering medium shall be clean silica sand or clear, fine, anthracite coal . . .". However, this does not prevent us from approving other media. We have, in fact, approved other multi-media filters. To my knowledge we have not received any request for approval of granular carbon filters nor have we received any data substantiating its efficiency for removal of turbidity, etc. From what we can determine, including a discussion with NERC in Cincinnati, while there is a good bit of information on organic removal by carbon filters, there has been little data collected regarding their ability to remove turbidity. We are willing to consider approval of carbon filters if data on their performance is available for evaluation.

STATEMENT OF WILLIAM E. WARNE, MEMBER OF THE BOARD AND CHAIRMAN OF THE NATIONAL WATER SUPPLY IMPROVEMENT ASSOCIATION

Mr. Chairman and members of the Committee. I am William E. Warne, representing the new Water Supply Improvement Association, I have spent 38 years in the water resources field and held such positions as Assistant Com-

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missioner of Reclamation, 1943–47; Assistant Secretary of Interior for Water and Power Development, 1947–51; Director of the California Department of Water Resources, 1961–67; Member of the President's Water Pollution Control Advisory Board, 1962—65; and Member of the California Water Pollution Control Board, 1959–67.

Our Association has as its purpose the support of programs to improve the quality of our water supplies nationally and to promote the use of desalination and other water sciences in doing so. We are in support of S. 433. We believe, however, that the committee might give consideration to including project-type programs in the legislation.

THE CASE FOR A NATIONAL COMMUNITY WATER SUPPLY ACT OF 1973 IN CONJUNCTION WITH THE SAFE DRINKING WATER ACT OF 1973 (S. 433)

Community water supplies—adequate, pure, wholesome and sweet—are essential to a satisfactory environment for urbanizing America, but community water systems to provide such supplies today are 30 years behind the National needs.

Our new water pollution control programs should not be underestimated. The elimination from wastewaters through these programs of contaminants that may enter our drinking water supplies and degrade them is of paramount importance. Water pollution control, however, will not maintain the quality of community water supplies. More is required than removal of contaminants. Hence S. 433, and hence this proposal for an additional step in the urban water supply improvement program.

After a study of 969 representative public water supply systems, the Bureau of Water Hygiene of the Water Quality Office of the Environmental Protection Agency, in its conclusion recommended:

> "Improved planning to provide adequate quantities of safe water to the majority of our people who live in urban areas, and to assure optimum resource development and utilization to meet the needs of major population complexes."

The report found many faults from a public health point of view, with the quality of drinking water in the United States. The drinking water standards bill (S. 433) is part of the answer, but the recognized need for more adequate quantities of *safe drinking water* is not adequately dealt with in S. 433 as it now stands.

Dr. Jay H. Lehr, Executive Director, National Water Well Association, told a Congressional Committee in 1972 that "Federal assistance and leadership is essential for training, research and development, for stimulating state water hygiene programs and *for solution of regional, interstate or metropolitan area water supply problems.*" (emphasis supplies) The Community Water Supply Act of 1973, which might be added as Title II of S. 433 would be designed to provide the full answer.

About 25 percent of the population in the United States is not served by any community water system at all. In Great Britain 99 percent of the people are so served.

In Great Britain, 50,000,000 people are served by no more than 300 systems. In the United States, more than 100 times as many systems, great numbers of them inadequate, serve but three times the number of people. The Farmers Home Administration has financed 3,600 rural systems since 1965, but it has 10,000 applications on file. We have no adequate National program to extend community water services to all of our people or to combine and upgrade the large number of systems into adequate regional systems. Only North Carolina, among the states, has a regional consolidation program. We have no adequate National program to assist in incorporating in our community water supply systems such new technologies as desalination and water reclamation in order to improve water quality and to extend the use of present supplies.

A satisfactory community water supply has the following requirements:

First: Community water supplies must be adequate to meet the needs of our growing cities and their suburbs. The supplies are not now adequate in many instances. In metropolitan areas jerry-built, crazy-quilt patterns of water supply systems all too frequently leave dry or partially watered islands within the metropolitan boundaries.

Second: Community water supplies must be pure. The drinking water standards bill (S. 433) is a response to the realization that serious failures persist

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in providing pure drinking water in the United States. The control of pollution in waste waters that enter the streams and groundwaters is essential to protect the sources of supply of our community water systems. The 1972 Water Pollution Control Act promises eventual success in providing the needed degree of protection of sources from contamination. But attention must be given to other actions that are equally needed in order to supply and to treat drinking water in our community water systems. Hence S. 433 and this proposed addition.

Third: Community water supplies must be wholesome. Drinking water that is free of disease is not necessarily good enough. Such water may contain unwholesome concentrations of dissolved solids, be annoyingly hard, and rust out or corrode water pipes. There are, in fact, hundreds of communities in the United States that have drinking water supplies that never meet the present drinking water standards recommended by the United States Public Health Service, even though the water they serve may be unpolluted. Two-thirds of the states have communities in which sadly this condition prevails. In several states hundreds of thousands of people either drink water of more than 1,000 parts per million of total dissolved solids—the recommended standard is 500 ppm—or they buy costly bottled water to avoid the necessity of drinking what is served to them through public systems. This substitution of water from a jug, delivered as in Biblical times on the back of a servant, indicates the antiquated solutions we have developed for many of our drinking water problems. Such antique answers, as costly as they are to the individual, do not eliminate the economic penalties levied on the communities by the supplies with unwholesome mineral contents. In Orange County, California, a recent study by the Orange County Water District disclosed that each householder was penalized $150.00 per year through accepting poor quality water into the water piping of his home. The poor quality water corroded and filled up the pipes which had to be replaced in about 10 years. Bottled drinking water, supplied at whatever cost, did not solve this economic problem for the water user.

Fourth: Community water supplies must be sweet. Turbidity, color, tastes and odors in the drinking water are not acceptable to the discriminating citizen. Aesthetic consideration, such as the elimination of these, are considered in S. 433. Degraded water from the Colorado River that would be considered distasteful in many areas of the country is served to about 10,000,000 people in the Southwest. In California and sister states of the Colorado River Basin, something more than traditional treatment such as that given in today's water supply systems, will be required, or substitutes must soon be found for waters from the progressively degrading Colorado River.

MAKE ACCEPTABLE DRINKING WATER IN THE '70'S A NATIONAL OBJECTIVE

Make our drinking waters acceptable in the 1970's. Let this be our National objective.

A National Water Supply Project Act is needed; legislation that not only will set standards for drinking water in order to protect the public health, but also will create a National program in association with regional water supply agencies to investigate, finance and construct community water supply projects that will meet the tests of adequacy, purity, wholesomeness and aesthetices.

WATER FACTORY 21

The Orange County Water District with its Water Factory 21, is providing a demonstration of a multiple-level, multiple-purpose water supply and water quality improvement project of one of the types that will be required by the Twenty First Century in many regions in the United States. The District is cooperating with the Office of Saline Water of the United States Department of the Interior and with the Orange County Sanitation District in its Water Factory 21 project. New developments in the water sciences are being meshed into the water system of the District. The manner in which this is done points up the value of a national program made up of just such projects, each project designed to fit a niche in its own region as Water Factory 21 has been formulated to fit its niche in the Santa Ana River Basin. A frontal attack on the National community water supply problem is needed today, not merely by the next generation.

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The Water Supply Act of 1958 broadened the piecemeal authority of the United States Army Corps of Engineers and the Bureau of Reclamation of the United States Department of the Interior with respect to the inclusion of municipal water supply considerations in their planning of multiple-purpose dams and projects.

The statement of policy in the Water Supply Act of 1958 is as follows:

> "It is hereby declared to be the policy of the Congress to recognize the primary responsibilities of the States and local interests in developing water supplies and domestic, municipal, industrial, and other purposes and that the Federal Government should participate and cooperate with States and local interests in developing such water supplies in connection with the construction, maintenance, and operation of Federal navigation, flood control, irrigation, or multiple-purpose projects."

The statement of policy limits the Federal Government to participation in development of community water supplies to situations in which the developments are incidental to projects that are primarily designed for other purposes; purposes which are no more vital to the welfare of the people than is the supplying of good drinking water. Community water supply should be made a primary function of a National program.

The United States Department of Housing and Urban Development, likewise, has a limited function in the community water facilities field, as has the Department of Agriculture.

S. 433 provides in Section 9 for a survey of rural drinking water supplies. This section should be expanded to provide for the survey in similar detail of urban water supplies, the survey to be conducted by the Secretary of the Interior in a program to be concurred in by the Administrator of EPA. Too little information on the sources, reserves, adequacy and quality of drinking water has been assembled and evaluated. The Department of the Interior has in the Geological Survey, the Bureau of Reclamation, the Office of Saline Water and other agencies the professional people required to conduct a national survey. The Administrator should be provided the funds to finance the activities to be undertaken by the Secretary in connection with the survey. Two years should be allowed for completion of the general recognizance report and for its submittal to the Congress.

S. 433 PROPOSED FOR PUBLIC HEALTH ASPECTS OF PROGRAM

S. 433 would recognize the preeminence of the Environmental Protection Agency in the field of protection of the public health. S. 433 would make a National program of safeguarding drinking water and improving the operations of local water treatment facilities.

Fault is not found with S. 433 nor with *any* of the past efforts to authorize drinking water supply programs, but with *all* of them.

Taken together all of these activities do not make a National program for insuring satisfactory community water supplies. The combined efforts would fall short of meeting the whole need, even if the activities should be coordinated, which they have not been in the past, unless a National program is added to provide *adequate* community water systems and to bring the supplies up to acceptable standards of availability and quality.

The National program being prepared should not reduce the reliance on "States and local interests in developing water supplies for domestic, municipal, industrial, and other purposes," to repeat the language of the policy stated in the Water Supply Act of 1958. The program should simply broaden and coordinate the responsibilities of the Federal Government, acting as a participant with the local agencies, in resolving a National problem.

DRINKING WATER IS BEING PROGRESSIVELY DEGRADED

Taken as a whole, the community water supplies of the United States are being progressively degraded. The quality of the services that they render are not steadily improving. Increasing population continues to render the community water supplies less adequate year by year. The influences of urbanization are not diminishing with time in their adverse effects on our community water supplies. The water we drink will continue to grow poorer and less palatable and more costly with each passing decade until positive steps are taken to reverse the present trends.

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Protection of the environment is very popular right now, and justly so. Environmental protection and enhancement, however, mean different things to different people. A definition of the environment in one of the bills that was before the Congress in 1972 declared "Environment includes water, air, land, all living things therein, and the interrelationships which exist among these." The interrelationships among all living things are ever changing, so our environment, if the definition is acceptable, has never been static. And it will not be unchanged in the future. Before man appeared on the earth the environment grew hostile to the dinosaur and the dinosaur disappeared. Man modifies his environment, and he has done so at least since he first mastered fire with which to warm his cave. Man is a part of nature's purpose. If man insists on damaging and degrading his environment, he will go the way of the dinosaur.

Man can direct his efforts in ways that are compatible with his needs and that lead toward enhancement of his environment. That environmental enhancement will be acceptable to nature. The environment of earth will not necessarily become hostile to human life for thousands of generations to come.

NATIONAL PROGRAM OF PROJECTS CAN STRENGTHEN LOCAL AGENCIES

There may be a fear that adoption by the Federal Government of an integrated, forceful program to improve the Nation's community water supplies might reverse the reliance on State and local interests to discharge their responsibilities. A National program need not have such a result. The National Reclamation Program which has been in effect for 70 years has not reduced the responsibilities of the irrigation districts and other local agencies in provision of adequate agriculture water to their water users. In fact, the Bureau of Reclamation, working with the 17 reclamation states, has provided the strongest influence in establishment of strong, local irrigation water users organizations. The Bureau frequently has brought together diverse, warring local groups and agencies into an effective district of regional scope so that the region might be served with irrigation water. A Federal irrigation project frequently has resolved problems with which otherwise the local water users could not cope. Intelligent pursuit of a National community water supply program will bring similar beneficial results in our divided, subdivided and disparate metropolitan regions. The people moving into the cities today are no less intelligent and cooperative than the farm folk were 70 years ago when they moved into the deserts of the west and created the problems of irrigation which the Bureau of Reclamation was organized to solve.

S. 433 WOULD PROTECT DRINKING WATER FROM CONTAMINATION AND DISEASE

The drinking water standards bill (S. 433) would protect the community water supplies from contamination and disease. Reexamination of drinking water standards to assure full justification of their provisions, is an objective of the bill, which would authorize review of the standards from time to time as experience and improved knowledge might dictate. S. 433 should be Title 1 of the National Community Water Supply Act of 1973.

If this suggestion is followed, Title I would provide:

(1) that EPA establish minimum Federal drinking water standards prescribing maximum limits for contaminants as well as standards for the operation and maintenance of drinking water systems and surveillance, monitoring, site selection and construction standards for public water systems to assure safe dependable drinking water;

(2) that EPA establish recommended standards to assure aesthetically adequate drinking water;

(3) that the States will be primarily responsible for enforcing the standards with Federal enforcement if the states fail to act in cases of imminent hazard;

(4) that a National Drinking Water Council be established to advise the administrator with respect to proposed standards;

(5) that EPA shall monitor the enforcement by the states of the standards to determine whether they are not being unreasonably deviated from to any significant extent; but if they are the Administrator may take remedial action after notice and hearing;

(6) that EPA conduct, help finance, and promote research into improvement of water supplies, technical assistance, and training of personnel for water supply occupations;

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(7) that EPA conduct a rural water survey within two years of enactment;
(8) that EPA make grants for special study and demonstration projects with respect to water supply and water recycling technology for rural or urban application;
(9) that EPA make grants to the States to defray the costs of State programs;
(10) that any person adversely affected by proposed regulation may request and will be granted a public hearing by the Administrator; that judicial review be authorized in accordance with Section 701–706 of Title 5, United States Code; and that citizens be authorized to bring injunctive actions against violators and against the Administrator for failing to perform mandatory duties;
(11) that every supplier of water who is subject to the standards keep records and make appropriate reports concerning his activities;
(12) that the Administrator may send inspectors into regulated property to examine records and test the system's operations, including the raw water source; and
(13) that penalties be assessed for willful violations of the standards.

TITLE II WOULD ADD A NATIONAL PROGRAM TO INSURE ADEQUACY OF SUPPLIES

A Title II should be added to S. 433 to formulate the National Community Water Supply Act of 1973. Title II would:
(1) Reaffirm the policy stated in the Water Supply Act of 1958, but remove the restriction on the Federal water planning and construction agencies to treat with community water supply improvements only when they are incidental to other project purposes.
(2) Authorize and direct the Secretary of the Interior, on the request of the Administrator, (a) to conduct investigations and surveys of water supplies for community water systems, including the quality thereof; and (b) to plan and design multiple-level and multiple-purpose projects to improve community water supplies in cooperation with states and/or local agencies, including private companies, employing all appropriate engineering and water science technologies to insure adequate, pure, wholesome and sweet drinking water for distribution to water users.
(3) Authorize the Administrator, through the Secretary to conduct and to participate in research and development programs and projects conducted by others for the purpose of developing new applications of the water and engineering sciences to the community water supply programs.
(4) Authorize the Secretary to plan, design and construct works to renovate, recycle or dispose of residues and wastes without unnecessary environmental degradation.
(5) Authorize the Administrator, notwithstanding any other provision of law, to make grants-in-aid of construction of regional community water supply projects (a) that are determined by him likely to be effective in eliminating small, inefficient, inadequate or non-complying systems within metropolitan zones; (b) that are likely to extend the water supply through improving its quality to permit one or more reuses of the waters in the regional system; (c) or that employ advanced technologies or applications of water sciences for demonstration purposes. The grants-in-aid shall be made in accordance with standards and regulations promulgated by the Administrator, but in no event shall the grants exceed the proportion of the cost of the community water service project that is allocable to the authorized purposes.
(6) The Secretary shall finance, on approval by the Administrator and in accordance with provisions of this Title and under contracts satisfactory to him entered into with agencies responsible for comprehensive community water services in the regions to be served by the proposed project, the construction by such agencies of regional community water supply systems, provided that (a) any such regional community water supply project has been found by the Secretary to be economically and technically feasible and to be consistent with environmental objectives of the region in which the project is to be located; (b) the Secretary has determined that the project is needed to protect the health and welfare of the people, to extend the use of the water resource, and to sustain or support the development of the region to be served; and (c) the

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Secretary has entered into an agreement with an agency satisfactory to him that is responsible for comprehensive community water services in the region to be served by the proposed project for full repayment of the construction loan in 40 equal annual installments with interests at the rate of 4 percent per annum.

In reviewing plans for community water supply projects submitted by local agencies or regional combinations of such agencies and in planning community water supply projects, the Secretary shall take into account, in determining requirements for reimbursement of costs, grants-in-aid that are applicable under this Title or any other compatible Federal program.

(7) When specifically authorized by the Congress, the Secretary may construct regional community water supply systems in accordance with reports submitted by him through the Administrator and the Water Resources Council to the Congress (a) describing the need for the projects, (b) containing findings with respect to the economic and technical feasibility of the project and its environmental impact; (c) estimating the costs of the construction; and (d) setting forth the method of repayment under binding agreemens to be entered into with responsible local community water supply agencies of regional scope in 40 years with interest at 4 percent per annum of the actual costs that are allocated for repayment. The repayment contract for each project shall provide that the title of physical works shall remain in the Federal Government until repayment is completed. The contracting agency shall agree to operate and maintain at a level of proficiency satisfactory to the Secretary and the Administrator all of the facilities and faithfully to serve without discrimination and in accordance with project plans all regional sub-divisions for which supplies are provided by the project as constructed.

(8) In carrying out the provisions of this Title, the Secretary shall coordinate his activities through the Water Resources Council with activities conducted under the Water Supply Act of 1958; with those of the Environmental Protection Agency conducted under Title I of this Act, with those of the Department of Housing and Urban Development conducted under the Housing Act of 1954 and the 701 programs, and with those of the Farmers Home Administration. Nothing in this Act shall be interpreted as modifying or limiting the Federal Water Pollution Control programs established under any other Act of the Congress.

(9) Authorize the Secretary to perform any and all acts and to make such rules and regulations with respect to his responsibilities as may be necessary and proper for the purpose of carrying the provisions of this Title into full force and effect.

(10) Authorize to be appropriated from funds in the United States Treasury not otherwise appropriated for (a) administration, surveys, investigations and reports under this Title, $10,000,000 per annum until 1978 and thereafter so much as may be justified by the Secretary; (b) for loans to construct feasible community water service projects not to exceed $100,000,000 annually, except that after 1978 the amount may be adjusted annually to conform to totals recommended in the Annual Report of the Secretary and concurred in by the Administrator; (c) for research and development not to exceed $10,000,000 per annum; (d) for grants-in-aid of construction of regional community Water Service Projects approved by the Administrator in accordance with this Title not to exceed $50,000,000 annually, except that after 1978 the amount may be adjusted annually to conform to totals recommended in the Annual Report of the Secretary and concurred in by the Administrator; and (e) such amounts as may be needed from time to time to construct community water service projects previously authorized by the Congress in accordance with plans submitted by the Secretary, approved by the Administrator, and coordinated by the Water Resources Council.

ENVIRONMENTAL ENHANCEMENT REQUIRES ACTION, NOT RETREAT INTO INACTION

America's resources and environment should, of course, be husbanded and protected. Instead of retreating fearfully before the onslaughts of increasing populations, the leaders within the water industry should resolve, as they know how to do, the new problems that are raised by the increasing number of people to be served. The environment of many millions of our urban people is degraded right now by poor community water supplies; that environment

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will continue to be degraded until action is forthcoming. The engineering, and technical, and the scientific knowledge are available to resolve these problems. In reverse osmosis, multiple-flash distillation, tertiary waste-water reclamation, conjunctive surface and groundwater management, to name a few advancing technologies, we have means that can be used in appropriate places in our conventional water systems for the purpose of improving the urban environment.

Recently a widespread group came together and organized the National Water Supply Improvement Association in the firm belief that the time for action is at hand and that government agencies and the water industry now have command of the technology to make a satisfactory start. Those who study the problems and their solutions must agree.

The time when we should face the drinking water issues and in true American fashion take effective action to resolve them is the 1970's. The challenges are the improvement of the urban environment and the health and welfare of scores of millions of our American people.

STATEMENT OF FREDERICK N. ALLEN, EXECUTIVE DIRECTOR, NATIONAL ASSOCIATION OF WATER COMPANIES

My name is Frederick N. Allen. I am the Executive Director of the National Association of Water Companies, with offices at 952, The Pennsylvania Building, Washington, D.C. I am also a former chairman of the Maine Public Utilities Commission, a former president of the New England Conference of Public Utilities Commissioners, and a former president of the National Association of Regulatory Utility Commissioners.

The National Association of Water Companies is a non-profit trade association, founded in 1894, and is the only national trade association representing the investor-owned segment of the water supply industry. Investor-owned companies number some 6,000 in the United States, and serve some 30 million customers out of 175 million served by public water supply systems. The investor-owned segment of the industry, in addition to being regulated by various environmental, health, and water resource agencies of the several states, also is regulated in all cases by the public utility or public service commissions, as to rates and service.

Our Association has long been proud of its excellent record in serving a substantial number of the people of the United States. On checking with the Environmental Protection Agency's Water Supply Division this week, I find that they do not have a record of any investor-owned water company in the country ever having been placed on their prohibited list. This re-affirms our position, that the investor-owned segment of the industry is doing a very thorough and expert job in supplying the American people with a quality product, through responsible business managed companies which have adequate plant and, more importantly, long range planning. The matter of long range planning is vital to the continued supply of safe drinking water. As you will recall, some eight to ten years ago there was a draught in the eastern part of the United States. Here again, no investor-owned water utility was found to have a deficiency of supply. So again we say, our record is an envious one, and one of which our member companies are justly proud.

The National Association of Water Companies supports the goals and purposes of S. 433 and, for the most part, feels that the legislation as written, will achieve these objectives. We would like to offer the following comments on specific sections of this bill, and on S. 1735.

ADVISORY COUNCIL

With regard to Section 7, establishing the National Drinking Water Advisory Council, we take exception to the provisions which would disallow from membership any individual, otherwise qualified, who is employed by a water supplier. In our opinion, the practical experience brought to the Council by these individuals would out weigh any possible conflict of interest. We feel this is a definite need, if the Council is to truly represent all the knowledge necessary in providing sound advice to the Environmental Protection Agency. Certainly there can be no one more knowledgeable about drinking water than the men and women who are supplying water every day of the year to the consuming public.

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GRANTS & LOANS

We would respectfully call to the Committee's attention the position of the National Association of Water Companies, which has been well stated in testimony before the House Environmental and Health Subcommittee, and earlier in a statement by one of our past presidents, Mr. Frank E. Dolson, before the National Water Commission, on November 6, 1969. As both statements indicated, our Association "is of the conviction that public water utility operations should be self-supporting, but should the Congress determine that grants, loans, or other assistance to public water utilities are in the nation's interest, such grants, loans, or other assistance should be made equally to all public water utilities, regardless of ownership."

I would like to point out that if grants were made to an investor-owned utility, such grants would not result in a windfall to the stockholder. As the Committee is well aware, under utility accounting and regulations of all our state commissions, contributions to utilities, such as grants, cannot be added to the rate base upon which a rate of return is determined. The earnings allowed the utility under regulation would remain the same as if there had been no subsidy.

The 28 million people served by the investor-owned water supply industry are being unfairly treated by the prohibition of grants and loans to the utilities serving them. They are being forced to subsidize, through their tax dollars, the water utilities of communities in which they do not reside. We believe that this situation must be corrected.

CITIZEN SUITS

The provisions of S. 433 permitting citizen suits are a matter of great concern to us. We feel strongly that such action, if it must be taken, should be directed only against the agencies of the local, state, or federal government, and should not be directed at individuals or utilities. We agree with the concept of a citizen suit aimed at forcing the appropriate agency to take steps to correct a water supply problem. We do not agree with the concept of forcing the utility to defend itself from citizen suits over violations of standards, both real and imagined.

Citizen suits against individual utilities will have a significant impact because of two important characteristics of our industry—the system of user charges and small size of 85% of all water utilities. Our industry bases its system of user charges, as closely as possible, on the actual expenses incurred in providing service to a particular customer. Which of our customers is supposed to pay the legal costs associated with a suit filed by a single individual and which may later prove to have no merit? And what of the thousands of small water utilities? The financial condition of these companies is at best, marginal. However, they continue to provide water service—a service which may need improvement, but one which the community cannot do without. Use of their limited financial and management resources to fight citizen suits will not produce better quality water. It will, instead, threaten their continued service.

NOTIFICATION

In the area of notification, we agree that the public should be fully informed of those violations of the drinking water standards which are dangerous to the public health. We are concerned, however, that public notification of each and every failure to comply with the standards will have two undesirable side effects. First, the public may become unduly alarmed at a situation which is not dangerous; and second, the public may not take the proper notice of a situation which is dangerous. The notification provisions of this act should take into consideration the desired public reaction.

With these exceptions, our Association supports S. 433. Safe drinking water and quality service have always been the goals of the investor-owned water supply industry.

S. 1735

S. 1735, the so called "Administration Bill," and the testimony of the Honorable Robert W. Fri, Acting Administrator of the Environmental Protection Agency, relating to this bill, deserve separate comment. We believe the enforce-

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ment provisions of this legislation are inadequate to insure safe drinking water.

The enforcement of the drinking water standards, as indicated by Mr. Fri's testimony, would be a system based on self-policing. A water utility who violates a primary standard would be required, on his own, to make a public notification of this violation. "This provision, coupled with a citizen suit provision will, we believe, make enforcement actions by regulatory agencies largely unnecessary." (Testimony of The Honorable Robert Fri, before the House Environmental and Health Subcommittee, March 8, 1973)

This type of enforcement penalizes those utilities providing quality water while not bringing the other utilities into line. A utilitity, who tries to provide safe drinking water, but for technical or financial reasons cannot meet a standard, will make the proper notification, even though he faces court action. On the other hand, any utility who would knowingly violate a primary standard would, in our opinion, also violate the notification provision. It should also be pointed out that, under such a system, few utilities will seek technical assistance from state or federal agencies in solving water quality problems.

In summary, we do not feel that this legislation will produce the environment necessary to ensure safe drinking water.

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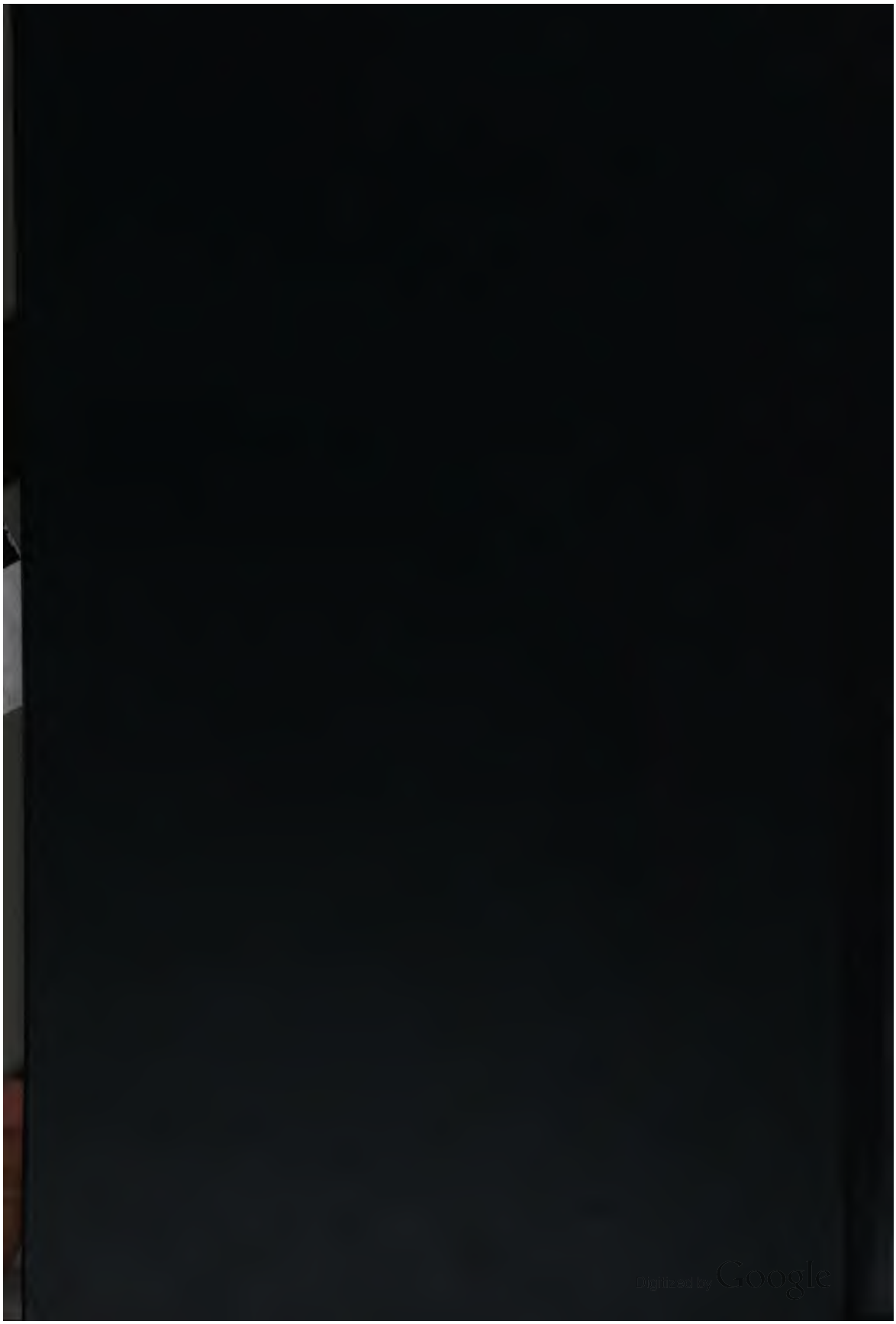
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